
# Challenge TB - Cambodia

# Year 2

# Annual Report

# October 1, 2015 – September 30, 2016

**November 4th, 2016**

**Cover photo:** Presumptive TB patients were transported to screening conducted by Cambodia Anti-Tuberculosis Association (CATA) team, at Pon Ley Health Center, Prey Chhor Operational District, Kampong Cham province. Photo credited by Chry Monyrath.

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**Disclaimer**

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# Table of Contents

# List of Tables



# List of Figures

## List of Abbreviations and Acronyms

| | |
|---|---|
| ACF | Active Case Finding |
| CATA | Cambodia Anti-Tuberculosis Association |
| CCC-OC | Committee of the Country Coordinating Committee |
| CENAT | National Centre for Tuberculosis and Leprosy Control |
| CCM | Country Coordinating Mechanism |
| CHC | Cambodia Health Committee |
| CI | Contact Investigation |
| CNR | Case Notification Rate |
| COP | Chief Of Party |
| CTB | Challenge TB |
| CXR | Chest X Ray |
| DM | Diabetes Mellitus clinic |
| DQA | Data Quality Audit |
| DR-TB | Drug Resistant |
| ECF | Enhanced Case Finding |
| EQA | External Quality Audit |
| ERR | Electronic Recording and Reporting |
| GF | Global Fund to Fight AIDS, Tuberculosis and Malaria |
| GLI | Global Laboratory Initiative |
| HC | Health Center |
| HCP | Health Care Provider |
| ICF | Intensive Case Finding |
| IPD | In-Patient Department |
| IPT | Isoniazid Preventive Therapy |
| IQR | Interquartile Range |
| JATA | Japanese Anti Tuberculosis Association |
| KNCV | KNCV Tuberculosis Foundation |
| LTBI | Latent TB Infection |
| MDR | Multi-Drug Resistant |
| MSH | Management Science for Health |
| NFM | New Funding Model |
| NSP | National Strategic Plan |
| NTP | National TB Program |
| OD | Operational District |
| OPD | Out-Patient Department |
| PCF | Passive Case Finding |
| PEPFAR | President's Emergency Plan for AIDS Relief |
| PMDT | Programmatic Management Drug Resistant TB |
| PMU | Project Management Unit |
| PHD | Provincial Health Department |
| PR | Principal Recipient |
| TRP | Technical Review Panel |
| QA | Quality Improvement |
| RH | Referral Hospital |
| SACF | Semi Active Case Finding |
| SLD | Second Line Drug |
| SLIPTA | Stepwise Laboratory Improvement Process Towards Accreditation |
| TA | Technical Assistance |
| TB | Tuberculosis |
| TST | Tuberculin Skin Test |
| USAID | United States Agency for International Development |
| VHSG | Village Health Support Group |
| WHO | World Health Organization |
| Xpert | GeneXpert MTB/RIF |

# 1. Executive Summary

Since October 2014, the United States Agency for International Development (USAID) has funded the Challenge TB (CTB) project, a 5-year project globally led by KNCV Tuberculosis Foundation (KNCV) overseeing a consortium of nine international organizations. In Cambodia, FHI 360 leads the project in collaboration with KNCV, Japanese Anti Tuberculosis Association (JATA) and the World Health Organization (WHO). CTB Cambodia supported the National TB Program (NTP) in the following areas: 1) to increase TB case notifications and 2) to close the gap of "missing cases" (which is estimated at approximately one third of total estimated cases[1]) through innovative interventions at both community and health facility levels.

To achieve these objectives, CTB in Cambodia focuses on the following sub-objective areas: enabling environment; comprehensive, high quality diagnostic network; patient centered care and treatment; targeted screening for active TB; infection control; management of latent TB infection (LTBI); political commitment and leadership; quality data, surveillance and monitoring and evaluation; and human resource development.

Highlights of CTB achievements in Cambodia over the 12 months period are summarized below:

A theme of "finding missing cases" is one among several key foci for CTB Cambodia. This year, CTB contributed to 20% of the country's total TB case notifications, provided support to 95% of children under 5 years of age who received Isoniazid Preventive Therapy (IPT), and enabled TB diagnosis of nearly one-third of notified children (29%).

## 1. Patient centered care and treatment

During APA2, the CTB Cambodia project engaged in patient centered care and treatment. Results of these efforts include:

### a. Hospital Linkages

In Year 2, CTB provided TA to The National Center for Anti-Tuberculosis and Leprosy (CENAT) to develop a standard operating procedure (SOP) on hospital linkages for the national program. Hospital linkages is a set of interventions carried out in government health facilities to increase screening for TB, diagnosis and referrals to appropriate services. The SOP was finalized and submitted to CENAT for review and approval.

CTB continues to implement the hospital linkage approach in five RHs with a high volume of outpatient visits. Through CTB engagement, TB symptom screenings were introduced in all departments within the hospitals including out-patient and inpatient departments, as well as pediatric and diabetes (DM) clinics. During this reporting period, 151,645 patients visited an out-patient or in-patient department. Patients exhibiting TB signs and symptoms were referred for screening to TB units within the hospitals. 2,915 (1.9%) of all patients who visited these hospitals were diagnosed with TB and initiated treatment. In year 2, the TB case notification identified in the five RHs increased by 73% (2,915) compared to the previous year (1,499).

As a result of the hospital linkages work, which included development of an outpatient triage form that was endorsed by the NTP and the MOH, other regional hospitals (RH) outside the CTB target area are now using the tools demonstrating a scale-able, practical solution with applicability in RHs in Cambodia.

[1] National TB Prevalence Survey 2011

**b. Childhood TB**

During Year 2, CTB provided TA to CENAT, which included help with developing an SOP for Contact Investigations (CI) for the national program. Contact investigations are one of the most efficacious activities for finding and preventing child TB cases with links to isoniazid preventive therapy (IPT). The SOP, which includes protocols for community workers and health care staff, was finalized and submitted to CENAT for review and approval.

As a result of CTB and partner focus on Childhood TB care and prevention, TB screening among children has become routine at both the community level and in referral hospitals. Additionally, Village Health Support Groups (VHSG) are now identifying suspected TB cases of children and adults through CI. When childhood TB cases are suspected, they are referred to the referral hospital (RH) and a TB physician examines the child. During this reporting period a total of 1,666 (22.8%) out of 7,283 children screened had signs and symptoms of TB requiring further investigation at an RH for possible TB. Of these presumptive TB patients, 186 children (2.4%) were diagnosed with TB and initiated treatment, and 1,552 children (under 5) were enrolled on IPT after ruling out active TB. CTB has contributed both financially and with technical assistance to 29% (1,375) of the total TB case finding among children (4,739) and 95% (1,064) of total children started on IPT (1,119).

**c. Prisoners and inmates**

During this reporting period, annual Active Case Finding (ACF) was performed in 10 target prisons using chest x-ray (CXR) and GeneXpert MTB/RIF (Xpert). A total of 6,768 inmates (100% of all incarcerated) were screened using a CXR and among those, 87 TB cases (1.3%) were diagnosed and put on treatment. In addition, 1,125 inmates who had TB symptoms were screened for TB, and of those screened 31 patients were identified through passive case-finding. Over all, a total of 118 TB patients were diagnosed and initiated on TB treatment in the prisons.

During this reporting period, 12 inmates were released while receiving TB treatment, but only 7 successfully continued their treatment in their community.

The case notification rate (CNR) increased by 16%, from 1,542/100,000 in 2015 to 1,743/100,000 in 2016 among this high risk prison population.

**d. Elderly**

**Semi Active Case Finding (SACF):** A major focus of CTB is to address a key epidemiologic finding of the TB prevalence survey of 2011, which is high TB prevalence among elderly Cambodians.

Semi ACF activities (also called "Enhanced Case Finding") were conducted among elderly Cambodians visiting pagodas. Through the SACF activities, 7,747 elderlies, including monks and Ajars[2] (religious old men), were screened for TB symptoms, of which 60% (4,667/7,747) had at least one symptom suggestive of TB. A total of 97 active TB cases were identified (2% of presumptive TB patients), and 74 of these cases were bacteriologically diagnosed while 23 were clinically confirmed.

In May 2016, an interval review of semi ACF was conducted. The findings of this review suggested that Semi ACF provided additional yield of TB case finding among elderly persons when compared to the national TB yield in 2015 (more than 2,000 per 100,000 population versus 390 per 100,000 population).

**ACF:** From March to September 2016, CTB partnered with CATA to conduct ACF, using mobile CXR and Xpert testing on-site. CATA trained health center (HC) and village health support group (VHSG) staff on how to conduct ACF. Following this, HC and VHSG were able to participate in ACFs with CATA. During this reporting period, CATA conducted ACF in 99 HC of 9 ODs. A total of 26,085 presumptive TB cases among the elderly were identified and referred to HC for further investigation. Among those, 62% (16,215) of the elderly were eligible for CXR screening and 18% (4,610) of those who completed a CXR had suspicious findings. The team requested this group to submit sputum

[2] Lay man who acts as a liaison between the Buddhist clergy and the lay people

samples for Xpert testing. As a result, 1,217 TB cases were identified and initiated on treatment [*394 (1.5%), 4 (0.01%) and 819 (3.1%) elderlies had bacteriologically positive, rifampicin resistant and clinically confirmed TB, respectively (figure 4)*].

**e. Programmatic Management for Drug Resistant TB patients (PMDT)**

CTB partnered with Cambodia Health Committee (CHC) to provide PMDT services nationwide in Cambodia. CHC is providing treatment and follow-up care to RR/MDR-TB patients within communities. CHC work includes tracing the diagnosed patient for treatment, setting up community care, and providing ongoing regular treatment at the community level.

From Jan to Sept 2016, CHC provided treatment and care to 180 DR-TB patients (73 females, 107 males). The median age was 45 years old (IQR 33-56). The time from diagnosis to the initiation of MDR-TB treatment was less than 7 days between June 1 to September 30, 2016. The overall treatment success rate was maintained at more than 70% for the last few years. However, the death rate was slightly increased (9%) over the death rate (11%) in 2014, which may be associated with many factors, including delay in access to diagnosis, co-morbidity or XDR-TB.

**f. Advocacy, Community, Social Mobilization**

During Year 2 of the project, two patient-education banners were finalized and approved by the National TB Program (NTP) and printed. The banners aimed to: (1) instruct presumptive TB patients on how to produce good quality sputum and (2) to increase knowledge and awareness of TB symptoms.

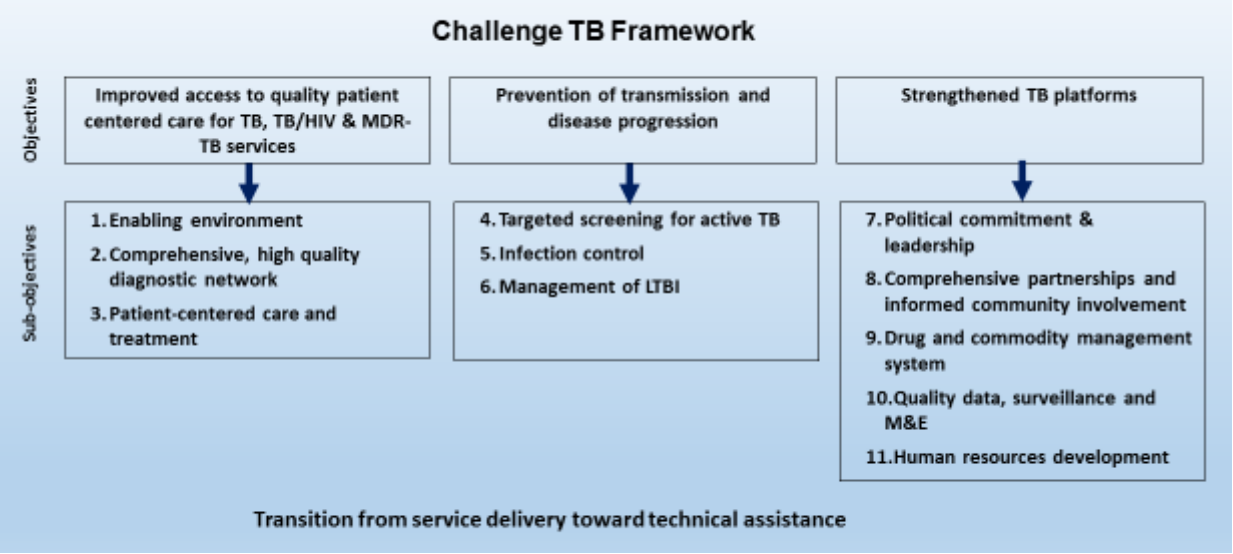
More than 1,000 banners have been displayed at 354 HCs, Referral Hospitals (RH) and public places, such as pagodas.

## 2. Introduction

The TB prevalence survey of 2011 showed that TB prevalence among sputum smear positive (SS+) cases for those over 15 years of age decreased 38% from a rate of 362/100,000 to 271/100,000 between 2002 and 2011. However, Cambodia still has one of the highest incidence and prevalence rates in the world. The Challenge TB project is a 5-year project, which started in October 2014 and is globally led by the KNCV Tuberculosis Foundation (KNCV) overseeing a consortium of organizations. In Cambodia, FHI 360 is the lead partner with Management Sciences for Health (MSH), and World Health Organization (WHO) and KNCV as active coalition partners in the first year. In the second year, MSH was no longer a collaborative partner while JATA supported CTB implementation instead.

The project provided in Year 1 and 2 technical assistance (TA) to the NTP in Cambodia to develop new innovative strategies for TB control with the primary goal **to improve case detection** and to close the **"diagnosis gap''** by targeting specific risk groups.[3] In order to achieve this goal, CTB builds on successful approaches (**semi-active case finding** among elderly over 55 years old and **contact investigations)** which have proven to be effective and have resulted in an increase in TB case notification compared to the routine TB services of passive case finding. In Year 2, the project covered 356 HC and 31 ODs in 14 provinces (please see annex IV).

**Figure 1: Challenge TB Framework**




This year's annual report for CTB Cambodia outlines the project's key accomplishments within sub-objective areas:

- Enabling Environment;
- Comprehensive, high quality diagnostics;
- Patient centered care and treatment;
- Target screening for active TB;
- Infection control;
- Management of latent TB infection (LTBI);
- Political commitment and leadership;
- Quality data, surveillance and monitoring and evaluation;
- Human resource development.

[3] It was estimated that approximately one third of total estimated cases are "missing", the National TB prevalence survey.

# 3. Country Achievements by Objective/Sub-Objective

## Objective 1. Improved Access

### Sub-objective 1. Enabling environment

***TB case notifications of adults and children with TB***
*In APA2, CTB identified and treated 7,070 new TB cases in adults and children (table 5) which is 20% of total case notifications in the country.*

In Year 2, CTB implemented TB control in 25 ODs in 12 provinces in order to increase TB case detection and close the diagnostic gap. The expanded approach to case finding included intensive SACF activities in pagodas, contact investigation in the community among TB patients' households, intensified TB symptom screening at hospitals via hospital linkages, and engaging in ACF at the community level. 53% of the 7,070 new TB cases identified through CTB were notified at RH level and 47% were referred from VHSG. Data on these activities were obtained from a review of TB register books in five ODs, and has helped CTB to better focus our efforts. However, a deeper analysis of these results is still needed.

**Key Results:**
In Year 2, CTB activities achieved 100% of target coverage at OD, prison and RH levels. While, at the HC level, CTB reached 99% of the target (356/359 HC). CTB reached these targets despite the restructuring of HCs under each OD. A few HCs that were previously within CTB's ODs were moved to another OD during the year.

| # | Outcome Indicators | Indicator Definition | Baseline (Year/ timeframe) | Target Y2 | Result Y |
|---|---|---|---|---|---|
| 1 | 1.1.3. #/% of public sector/parastatal care facilities that report TB cases to the NTP (stratified by type: military, social security, etc.) | Description: Proportion of public sector/parastatal care facilities that report TB cases to the NTP (stratified by type: military, social security, etc.)<br>Indicator Value: Percent<br>Level: National and Challenge TB geographic areas<br>Numerator: Number of public sector/ parastatal care facilities that report TB cases to the NTP<br>Denominator: Total number of public sector/ parastatal care facilities | 404 (RH=5 Prisons=10; HC=389) | 377 (RH=8; Prison=10; HC=359) (93 %) | 371 (98%) (RH=5; Prison=10; HC=356) |

### Sub-objective 2. Comprehensive, high quality diagnostics

In Year 2, CTB provided support for laboratory monitoring and training, and reported on Xpert utilization. CTB provided overall TA on the implementation of EQA. CTB's laboratory network included 42 microscopy centers, where laboratory technicians were trained and assessed using standard (i.e. international) external quality assurance (EQA) criteria. Slide selection, cross blinded rechecking of smear slides, and

on-site evaluation for EQA were conducted on a quarterly basis. In the CTB coverage sites, the false positive rate was at 0%, false negative rate was 1.6% and agreement rate was 98.4%, which is above the national target of 95%.

CTB invited Ms Linda Oskam, a global laboratory expert, to Cambodia to work with staff of the national reference lab to develop the national lab guideline. During the consultancy, a three-day meeting with NTP staff was organized. The structure, outline and key content of the national laboratory guideline was developed and agreed upon by the NTP. The timeframe for the process was established. The meeting agreed that the consultant will write the contents, design a photo or pictures of each lab procedure and share the draft with NTP staff in country for input.

**Table 1: Result of EQA**

| | Number of Microscopy Center | Result lab/QA Center | | | | | | False Positive Rate | False Negative Rate | Agreement Rate |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Pos/Pos | Pos/Neg | | Neg/Pos | | Neg/Neg | | | |
| | | | Low | High | Low | High | | | | |
| **CTB** | 42 | 60 | 0 | 0 | 6 | 5 | 629 | 0% | 1.6% | 98.4% |
| **National Total** | 202 | 337 | 3 | 7 | 21 | 41 | 3,475 | 2.9% | 1.8% | 98.1% |

**Key Results:**

Twenty slides were randomly collected from each laboratory for re-staining, and blinded re-examination by a different reviewer using the existing 18 quality assurance (QA) centers. The result from the first quarter of 2016 showed that out of 215 microscopy laboratories, 202 (94%) laboratories participated in the assessment. Of them, 174 (86%) laboratories showed adequate performance (i.e., high false positive or high false negative <5%). CTB supported monitoring visits and coaching to 18 HCs that previously demonstrated poor scores on EQA evaluations.

Lab technician prepared sputum specimen for Xpert testing, Trapaing Preh HC, Prey Chhor OD, Kampong province. Credited by Chry Monyrath.

*Indicator 2.1.2 was not achieved as the operational plan is available, but there is insufficient budget to implement and follow the standard technical and management principle e.g. EQA was not performed as planned.*

*Similarly, indicator 2.2.1 was not achieved as the number of microscopic HCs enrolled in EQA was less than the target set, due to overworked lab technicians from NRL and late approval of the GF budget on travel and supervision.*

*Indicator 2.2.6 was not achieved due to limited resource (budget and human) to implement quality management system.*

*Indicator 2.2.7 was not achieved as no assessment was required.*

| # | Outcome Indicators | Indicator Definition | Baseline (Year/ timeframe) | Target Y2 | Result Y2 |
|---|---|---|---|---|---|
| 1 | 2.1.2. A current national TB laboratory operational plan exists and is used to prioritize, plan and implement interventions. | Description: This indicator measures whether or not a country has a defined TB laboratory operational plan (work plan) within the larger National TB Strategic Plan or National Laboratory Strategic Plan. The country and partners use the operational plan to design and implement priority activities to strengthen TB diagnostic services and the network for TB control.<br>Indicator Value: Score based on the following:<br>0= Operational plan not available<br>1= Operational plan available<br>2= Operational plan available and follows standard technical and management principles of a quality work plan required for implementing the necessary interventions to build and strengthen the existing TB laboratory network (reference: "Practical Handbook for National TB Laboratory Strategic Plan Development"; http://www.stoptb.org/wg/gli/assets/documents/Lab_Strategic_Handbook.pdf)<br><br>3= Operational plan available and meets annual implementation targets | 0 (2014) | 2 | 1 |
| 2 | 2.2.1. #/% of laboratories enrolled in EQA for smear microscopy | Description: Proportion of laboratories enrolled in External Quality Assessment for smear microscopy<br>Indicator Value: Percent<br>Level: National and Challenge TB geographic areas<br>Numerator: Number of laboratories enrolled in EQA for smear microscopy<br>Denominator: Total number of laboratories performing smear microscopy | 31% (67/215) | 18% (40/215) | 13%<br><br>31/215<br>31 microscopic health centers with low scores on EQA have been supervised and coached. |

| | | | | | |
|---|---|---|---|---|---|
| 3 | 2.2.6. Number and percent of TB reference laboratories (national and intermediate) within the country implementing a TB-specific quality improvement program i.e. Laboratory Quality Management System (LQMS). | Description: This indicator measures the percentage of TB reference laboratories in the country that are implementing a quality management system for continuous improvement of all aspects of laboratory operations to assure accuracy and reliability of testing, disaggregated by national and intermediate levels. Provide a score/rating for every reference laboratory implementing LQMS, either the "GLI Stepwise Process towards TB Laboratory Accreditation" (scoring = phase 1-4) or SLIPTA/SLMTA for TB (scoring=stars 1-5).<br>Indicator value: Number and percent<br>(Reference: Laboratory Quality Management Systems Handbook; http://www.who.int/ihr/publications/lqms/en/)<br>Numerator: Number of TB reference laboratories implementing a quality improvement program<br>Denominator: Total number of TB reference laboratories in the country<br>Level: National and/or Intermediate | 0%<br>0/3<br>1NRL<br>2RRL<br><br>None are implementing LQMS | 0%<br>0/3 | 0<br>Only the National TB Reference Lab in the country is implementing EQA. There is no LQMS (no GLI or SLIMTA scoring was conducted) |
| 4 | 2.2.7. Number of GLI-approved TB microscopy network standards met | Description: This indicator measures whether or not a country has met the 11 GLI-approved standards for the TB microscopy network. A CTB checklist is provided to assess fulfilment of the requirements for each standard. Identify numerically (1-11) which standard(s) have been met.<br>(Reference: "TB Microscopy Network Accreditation: an assessment tool"; http://www.who.int/tb/laboratory/microscopy-network-accreditation-assessment-tool.pdf)<br>Indicator value: Number<br>Numerator: Total number of standards met (NE=not evaluated, 0=no standards have been met) | NE<br><br>4 STDs met #2,3,6,11 | NE | 0<br>No financial support to assess or improve the network |
| 5 | 2.3.1. Percent of bacteriologically confirmed TB cases who are tested for drug resistance with a recorded result. | Description: This indicator measures the percentage of bacteriologically confirmed TB cases that are tested for drug resistance and also have results recorded in the TB register (disaggregated by new and previously treated cases). Drug resistance testing includes phenotypic (culture DST) and genotypic (molecular DST by GeneXpert, LPA or other molecular technologies).<br>Indicator Value: Percent<br>Level: National and Challenge TB geographic areas<br>Numerator: Number of bacteriologically confirmed TB cases that are tested for drug resistance and have results recorded in the TB register.<br>Denominator: Total number of bacteriologically confirmed TB cases notified during the reporting period | 15%<br>1,975/12,747<br>Include Both Xpert and cDST | 17%<br>2,292/13,413 | 17.5%<br>(1,797/10,280) |

| | | | | | |
|---|---|---|---|---|---|
| 6 | 2.4.2. #/% of Xpert machines that are functional in country (stratified by Challenge TB, other) | Description: Proportion of Xpert machines that are functional in country<br>Indicator Value: Percent<br>Level: National and Challenge TB geographic areas<br>Numerator: Number of Xpert machines that are functional<br>Denominator: Total number of Xpert machines. | 56% (26/46) | 100% (46/46) | 100% (51/51)<br>-43 routine activities<br>- 8 ACF activities<br>TA support only from WHO lab staff. |

## Sub-objective 3. Patient-centered care and treatment

### a) Prison TB/HIV Services

In 2009, the TB prevalence rate in the prison setting was estimated through active case finding as 18 times higher than the general population with a prison prevalence rate of 5,000 per 100,000 population compared to general population prevalence of 1,250 per 100,000 population. Therefore, this was an important area to focus interventions with plans to transition the majority of these interventions to the government at the end of year 2.

In Year 2, CTB successfully screened all inmates upon arrival at a prison facility. This included conducting passive case finding using a standardized check-list for symptoms in all prisoners; and conducting annual screenings (active case finding) by X-ray for all prisoners, followed by Xpert testing for those with abnormal X-rays or with TB symptoms.

**Key Results:**

Treatment success rates in the 10 prisons supported by the project was maintained at >90%.

In Year 2, ACF and routine TB symptom screening at entry was implemented in all 10 prisons. A total of 6,768 prison inmates were screened by CXR. Among those, 118 TB cases were diagnosed (prevalence 1,544/100,000). This number and rate indicates a decreased prevalence since 2009 (figure 2). Over the past year, more than half of inmates (7/12) who were on TB treatment and released from prisons were referred and received treatment at the community level. Systematic symptom screening at prison entry was successfully implemented for all new inmates. The trend in case notification rates (CNR) among prisoners increased by 13% from 1,542/100,000 in 2015 to 1,743/100,000 in 2016.

Table 1 shows that the proportion of case notifications in Correction Center 3, Kampot and Koh Kong prisons was higher than in other prisons. The factors that have led to an increase in case notification include the following:

- all cases with abnormal CXRs were not confirmed as TB last year and hence not treated. Later some of these cases were reactivated.
- lack of isolation rooms for TB patients during the initial phase of their treatment and overloaded room capacity likely contributed to ongoing transmission among inmates. CTB has raised this issue with NTP and discussed with the directors of the prisons. The directors of some prisons allow TB inmates to stay at health posts during initial TB treatment or provide them with masks, if there is no facility.

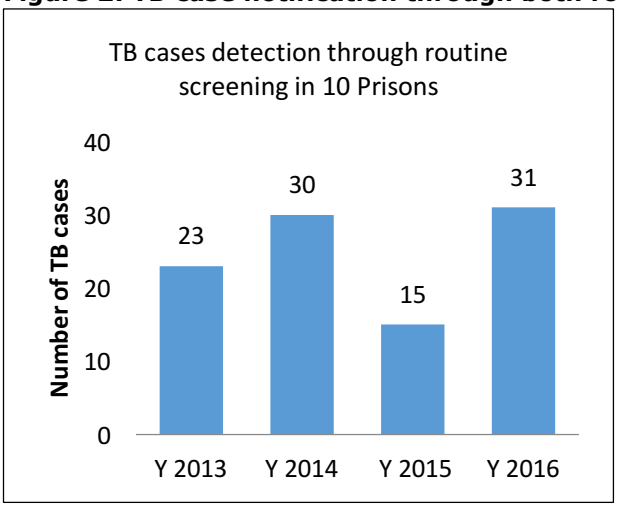
*This indicator was achieved at 100%.*

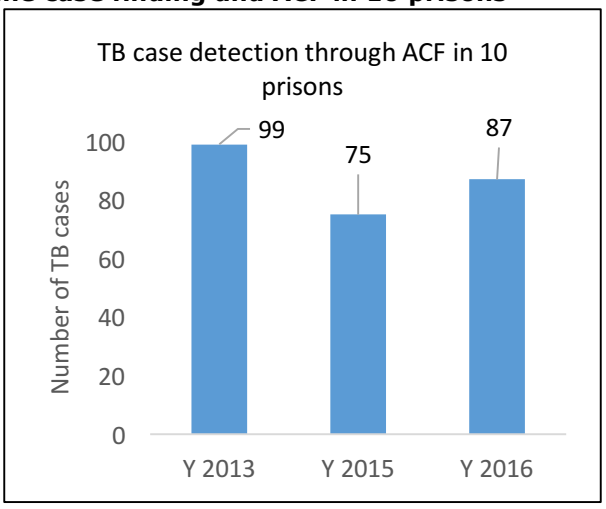
**Table 2: TB case detection in prisons under CTB support (2016) through routine screening and ACF**

| Prison Name | Inmate *Population* | Routine Screening | | | | ACF** | | | Total Case Detection (%) |
|---|---|---|---|---|---|---|---|---|---|
| | | # reached by routine screening | Bacterio-logically confirmed | Clinically diagnosed | Total | Bacterio-logically confirmed | Clinically diagnosed | Total | |
| Correction Center 3 | 1,480 | 254 | 5 | 0 | **5** | 27 | 10 | **37** | 42 (2.8%) |
| Kamong Cham | 1,054 | 215 | 5 | 1 | **6** | 4 | 9 | **13** | 19 (1.8%) |
| Kampong Speu | 505 | 33 | 0 | 0 | **0** | 2 | 3 | **5** | 5 (1%) |
| Takmao | 1,188 | 29 | 2 | 0 | **2** | 4 | 6 | **10** | 12 (1%) |
| Takeo | 394 | 57 | 1 | 3 | **4** | 0 | 1 | **1** | 5 (1.3%) |
| Prey Veng | 444 | 81 | 1 | 1 | **2** | 2 | 2 | **4** | 6 (1.4%) |
| Svay Rieng | 371 | 69 | 2 | 0 | **2** | 1 | 2 | **3** | 5 (1.3%) |
| Kampot | 479 | 67 | 2 | 2 | **4** | 3 | 3 | **6** | 10 (2.1%) |
| Prahsihanouk | 496 | 98 | 2 | 0 | **2** | 0 | 2 | **2** | 4 (0.8%) |
| Koh Kong | 357 | 146 | 1 | 3 | **4** | 2 | 4 | **6** | 10 (2.8%) |
| **Total** | **6,768** | **1,049** | **21** | **10** | **31** | **45** | **42** | **87** | **118 (1.7%)** |

** All inmates in prisons were screened by ACF

**Figure 2: TB case notification through both routine case finding and ACF in 10 prisons****




** No active case finding conducted in 2014. There was an increase in TB case notification in 2014 due to no active case finding in that year.
*** In 2015 the timeframe of report of case notification through routine TB symptom screening is from January to September.

### b) Hospital Engagement

CTB continued the implementation of hospital linkages from Year 1 in five provincial hospitals. The five referral hospitals (RH) are Sampov Meas, Battambang, Moung Rusey, Kampong Speu and Korng Pisey. Cough triage was implemented in all out-patient departments (OPD) of five RHs. TB symptom screening questions were integrated into both outpatient triage and in-patient medical forms to remind health care providers (HCP) to screen for TB. Cough triage and the FAST ("Find Actively, Separate Safely and Treat") strategy were implemented in those five referral hospitals. Patients who were coughing were separated and provided with masks. All presumptive TB patients were examined for further diagnosis.

**Key Results:**

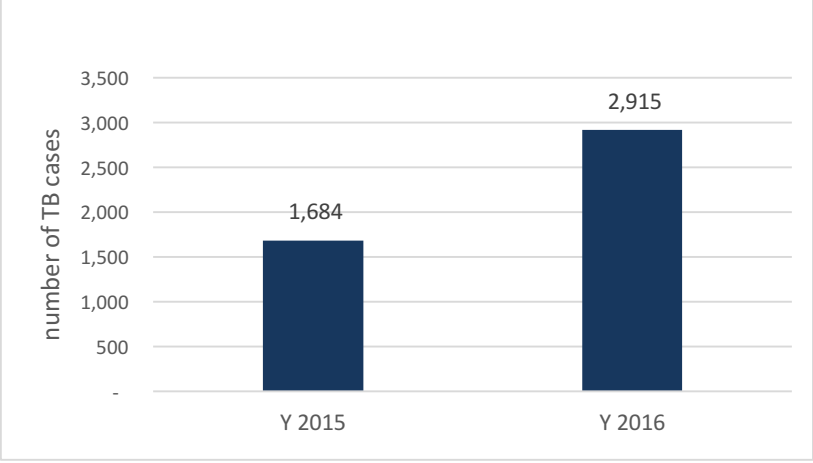
In Year 2, 2,915 (1.9%) of the total 151,645 patients presenting at the outpatient and inpatient departments in the five CTB supported hospitals were diagnosed with TB, and all of them received TB treatment (Table 3). TB cases identified in these five RHs during this reporting period increased by 73% compared to the previous year (from 1,684 to 2,915).

**Table 3: TB case finding in 5 hospitals under Hospital Engagement, CTB (Oct 2015 – Sept 2016)**

| Name of Referral Hospital | # of patient presenting at hospital | # of patient diagnosed with TB (%) | | # of bacteriologically confirmed pulmonary TB (%) | | # of clinically diagnosed pulmonary TB (%) | | Extra pulmonary TB (%) | |
|---|---|---|---|---|---|---|---|---|---|
| Battambang | 49,180 | 681 | (1.4) | 253 | (37.2) | 184 | (27.0) | 244 | (35.8) |
| Maung Russey | 19,207 | 570 | (3.0) | 24 | (4.2) | 459 | (80.5) | 87 | (15.3) |
| Sampov Meas | 26,830 | 157 | (0.6) | 45 | (28.7) | 56 | (35.7) | 56 | (35.7) |
| Kampong Speu | 39,138 | 543 | (1.4) | 177 | (32.6) | 252 | (46.4) | 114 | (21.0) |
| Korng Pisey** | 17,290 | 964 | (5.6) | 95 | (9.9) | 543 | (56.3) | 326 | (33.8) |
| Total (%) | 151,645 | 2,915 | (1.9) | 594 | (20.4) | 1,494 | (51.3) | 827 | (28.4) |

** Unavailability of Xpert machine at the hospital

**Figure 3: TB case detection in 5 hospitals (Oct 2014 – Sept 2015 and Oct 2015 – Sept 2016)**



### c) Active Case Finding among Elderly

In Year 2, CTB continued its focus to address the key epidemiologic finding of a high TB prevalence and mortality among elderly. Semi Active Case-finding activities (also called "Enhanced Case Finding") were conducted among elderly Cambodians visiting 215 pagodas in the 9 ODs within CTB's target areas. HC staff and Village Health Support Group (VHSG) went together early in the morning to pagodas during holy days to screen elderly and monks for TB symptoms. Rather than referring elderly individuals with presumed TB to distant TB screening centers, sputum samples were collected on-site and transported to laboratory centers for Xpert test or HCs for smear microscopy, where Xpert was not available.

Contact investigation tools were developed and introduced to 399 HCs with support from the project. HC staff recorded the names of bacteriologically confirmed TB index patients in the contact investigation forms and provided them to VHSG in the respective villages. VHSGs identified people (household and neighbors) who were close contacts of the index patient, registered them in the record forms and referred them to HCs for TB screening.

**Key Results:**

SACF at Pagodas: During the reporting period, at approximately 218 pagodas, 7,747 elderly including monks and Ajars, were screened for TB symptoms, of which 60% (4,667/7,747) had at least one symptom suggestive of TB. Even among this initial small screening sample, 74 cases of active TB were identified with bacteriologically confirmed smear positive TB (1.6% of presumptive TB patients) and an additional 23 were identified with clinically confirmed TB. The internal review of semi ACF was conducted in June 2016. The finding suggests that Semi ACF provided a significant additional yield of TB case finding compared to routine national activities. The national TB incidence in 2015 was only 390 per 100,000 population, yet more than 2,000 per 100,000 population in the SACF activities. The 'Number Needed to Screen' to find a single case of TB using the Risk Prioritization method was less than 100 across two operational districts (ODs), signifying that this is a worthwhile intervention.

**ACF via CATA:** From Mar to Sept 2016, CTB contracted CATA to conduct ACF activities in which CXR and Xpert testing were available at screening sites. CATA worked with HC staff and VHSG to ensure the correct procedures were followed for activities. A day before ACF was conducted, the VHSG informed the community, particularly those who were 55 years old and above, for all with TB symptoms to come to the HC for screening. During this reporting period, CATA conducted ACF in 99 HC in 9 ODs (Kampong Speu, Sampeou Meas, Bakhan, Kravanh, Krokor, Chamkaleu, Prey Chhor, Srey Santhor, and Preah Netpreah).

**Key Results:**

A total of 26,085 presumptive TB elderlies were identified by VHSG and referred to HCs for further investigation. Among those, 62% (16,215) were eligible for first screening by CXR and 18% (4,610) of those CXRs were suspicious of TB. All of those with abnormal CXR should submit sputum samples, which were tested by Xpert. As a result, 1,217 TB cases were identified and put on treatment. 394 (1.5%), 4 (0.01%) and 819 (3.1%) elderlies were bacteriologically positive, rifampicin resistant and clinically confirmed TB respectively (figure 4).

**Figure 4: TB case detection via ACF conducted by CATA in 99 HC in 9 ODs**

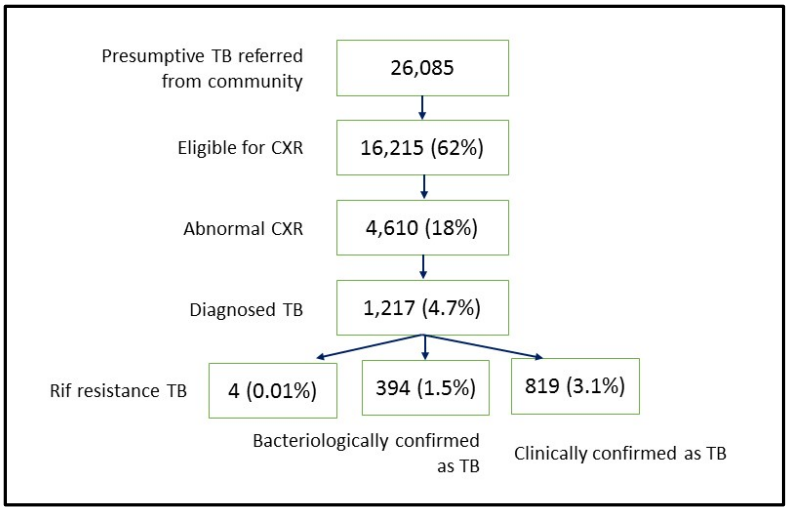



**Table 4: TB case finding through Semi Active Case Finding at Pagodas**

| # of Semi ACF conducted | # people screened | # of persons with presumed TB | Bacteriologically confirmed TB | Clinically diagnosed TB |
|---|---|---|---|---|
| 215 | 7,611 | 4,564 | 68 | 18 |

### d) Childhood TB

CTB successfully continued the implementation and quality improvement of diagnosis and treatment of TB in children in 25 ODs within 10 provinces. Children aged less than 15 years who were close contacts of bacteriologically confirmed TB index patients were screened for TB at households in the community. CTB implemented contact investigation (CI) at the community level to identify and refer presumptive TB children to HC and RH for work-up and diagnosis. Children who were contacts, but were found to not have active TB received isoniazid preventive therapy (IPT). In order to facilitate this care, CTB conducted trainings to HC and RH staff on the clinical management of childhood TB, Tuberculin Skin Test administration (TST), chest x-ray reading skills and IPT. The project also continued to monitor, supervise and provide on-the-job training for NTP staff, including provincial TB supervisors, OD TB supervisor, and staff at RHs and HCs.

**Key Results:**

In Year 2, 1,979 close contacts of smear positive index cases were screened for TB. Of the 2,684 child contacts identified, 2,054 (74%) under 5 contacts were eligible for IPT. Families of 502 (24%) eligible children refused IPT, while 1,552 (75%) eligible children (under 5) were enrolled for IPT. 1,877 children were referred to RH for clinical evaluation including TST, history and physical examination and chest x-ray. 186 (21%) of those referred were diagnosed with TB, and treatment was initiated. This data demonstrates the high prevalence of TB disease among children who are close contacts of sputum-smear positive index patients.

In the 25 ODs with CTB activities, 30% of all cases are found in children under the age of 15. Most likely this is due to over-diagnosis of TB by health care workers. In addition, over-diagnosis of extra-pulmonary TB (EPTB) among children, has been documented with EPTB rates as high as 96% of all childhood TB cases. To address childhood TB over-diagnosis, CTB and NTP conducted onsite coaching for HC and RH staff to discuss the screening and diagnostic algorithm. Improvement on this issue was observed.

### e) Programmatic Management of Drug Resistant TB patients (PMDT)

CHC is providing treatment and follow up care to the RR/MDR-TB patients in the community, including tracing the diagnosed patient for treatment, setting up community care, and ensuring ongoing regular treatment follow-up and drug supply in the community. To set up community care for MDR-TB patients, CHC provided a training to 3 DOT watchers for each patient (1st, 2nd, and 3rd DOT watchers). The 1st DOT watcher is a local health care worker who provides daily injections and morning DOTs during the intensive phase and supervises the 2nd & 3rd DOT watcher's performance for the entire treatment period. The 2nd DOT watcher is an existing village health support group member who provides daily DOTs. The 3rd DOT watcher is a family member who assists the 2nd DOT watcher to provide DOTs as his/her back-up.

**Key Results:**

From Jan to Sept 2016, CHC provided treatment and care for 180 DR-TB patients (107 males and 73 females). The median age was 45 years old (IQR 33-56). It was observed in the last 2 quarters that the time from diagnosis to initiation of MDR-TB treatment was less than 7 days. The overall treatment success rate has been maintained at more than 70% over the last few years. However, the death rate slightly increased (19%) in Year 2. This may be associated with many factors, including delays in access to diagnosis, co-morbidity or XDR-TB.

CHC has conducted contact investigation of 723 household members of 176 MDR-TB patients. Of those, 59 (8%) presumptive TB patients with symptoms have been identified. Sputum samples were collected for Xpert MTB/RIF and culture/DST. Only 8 (1% of the 723 investigated and 13.5% of the 59 who were symptomatic) of them were diagnosed as MTB detected, but no RIF resistance was observed, while the result of routine culture and DST are still pending. In addition, CHC conducted screening for TB symptoms among 28 people who were contacts with DR-TB patients, but not living in the same household. Among those, 5 were diagnosed with TB and one MDR-TB. All of them initiated appropriate treatment. So in total 87 contacts were tested for TB by Xpert and cDST, of whom 13 were positive, including 1 case of MDR-TB.

- *In this sub-objective area, three (3.1.4, 3.1.8 and 3.2.4) out of 12 indicators did not achieve the target. Number of MDR-TB cases detected was low. This is due to lack of referral of specimens of TB retreatment cases for Xpert and culture and/or the payment mechanism of re-imbursement for transportation of specimens for Xpert and culture.*
- *Indicator (3.1.8) data was not available and*
- *5 indicators (3.1.1, 3.1.10, 3.1.11, 3.2.1, 3.2.5, 3.2.6, 3.2.7, 3.2.19 and 3.2.24) achieved the target.*

**Table 5: New TB case detection in 25 ODs: Oct – Sept 2016 at community and HC levels**

*(9 ODs with comprehensive package and 16 focus only on childhood TB)*

| Type of TB | Adult (%) | | Child < 15 (%) | | Total |
|---|---|---|---|---|---|
| All Forms | 5,014 | (70) | 2,098 | (30) | 7,112 |

| # | Outcome Indicators | Indicator Definition | Baseline (Year/ timefram e) | Target Y2 | Result Y2 |
|---|---|---|---|---|---|
| 1 | 3.1.1. Number and percent of cases notified by setting (i.e. private sector, | Description: The number of TB cases all forms (i.e. bacteriologically confirmed plus clinically diagnosed, new and relapse) reported by the NTP disaggregated by setting (i.e. private sector, pharmacies, | 43,738 (2014) 6,529 (2014, 9 | 40,300 (2016) (7,200) CTB | 24,431 (Q4 not available) Nationwide) |

| | | | | | |
|---|---|---|---|---|---|
| | pharmacies, prisons, etc.) and/or population (i.e. gender, children, miners, urban slums, etc.) and/or case finding approach | prisons, etc.) and/or population (i.e., gender, children, miners, urban slums, etc.) and/or case finding approach (ICF, ACF, CI). Private sector providers should be described according to context and case finding approach, for example, type of provider targeted (i.e. ,for profit medical clinics, pharmacists, informal providers, private hospitals, etc.)<br>Indicator Value: Number and where available, percent<br>Level: National and Challenge TB geographic areas<br>Numerator: Number of TB cases all forms (bacteriologically confirmed + clinically diagnosed; includes new and relapse cases) reported (by setting/ population/ case finding approach) nationally and in Challenge TB geographic areas in the past year<br>Denominator: Total number of TB cases (all forms) notified nationally and in Challenge TB geographic areas | ODs, CTB supported sites) (Baseline by case finding approach will be set in Y2) | (~10% increase) | 7,112 |
| 2 | 3.1.4. Number of MDR-TB cases detected | Description: Total number of bacteriologically confirmed MDR-TB cases diagnosed. Project should follow the MDR-TB/Xpert algorithm in country regarding whether Rifampicin-resistant TB cases (RR-TB) should be counted as confirmed MDR-TB. If a country's algorithm states that a RR-TB cases is automatically assumed to be MDR-TB (i.e. no further DST required), then RR-TB should be included in the number of confirmed MDR-TB cases diagnosed. Otherwise, RR-TB should be excluded until proven via further DST that the case is a confirmed MDR-TB case.<br>Indicator Value: Number<br>Level: National and Challenge TB geographic areas<br>Numerator: Number of bacteriologically confirmed MDR-TB cases diagnosed during the reporting period | 121(2013) | 145 | 90 (Oct 15-Sep 16) |
| 3 | 3.1.8. % of TB cases (all forms) diagnosed among children (0-14) | Description: This indicator measures proportion of TB cases (all forms) diagnosed in children 0-14 years of age. When childhood TB is a priority, being able to report on and measure changes in case notification by age group is important.<br>Indicator Value: Percent<br>Level: National and Challenge TB geographic areas<br>Numerator: Number of TB cases (bacteriologically confirmed + clinically diagnosed; includes new & relapse cases) diagnosed in children 0-14 years of age in the past year.<br>Denominator: Total number of all TB cases (bacteriologically confirmed + clinically diagnosed; includes new & relapse cases) reported in the past year | 39% (5,756/ 15,593; 2014, in 21 ODS) | 20% (3,430 /17,152) | 19% (6,885/35,638) |

| | | | | | |
|---|---|---|---|---|---|
| 4 | 3.1.10. #/% of prisons conducting regular screening for TB | Description: Proportion of prisons conducting regular screening for TB according to internationally recommended national policy<br>Indicator Value: Percent<br>Level: National<br>Numerator: Number of prisons conducting regular screening for TB<br>Denominator: Total number of prisons | 10 (CTB supported sites) | 100% (10/10) | 100% (10/10) CTB supported sites |
| 5 | 3.1.11. #/% of prisons conducting screening for TB with chest X-ray | Description: Proportion of prisons conducting screening for TB with chest X-ray<br>Indicator Value: Percent<br>Level: National<br>Numerator: Number of prisons conducting screening for TB with chest X-ray<br>Denominator: Total number of prisons | 10 (CTB supported sites) | 100% (10/10) | 100% (10/10) CTB supported sited |
| 6 | #/% of new inmates screened | | 320 (100%) | 400 (100%) | 4,110 (100%) |
| 7 | #/% of new inmates diagnosed with TB | | 0 | 0.004% (of new inmates screened) | (0.97%) 4/4,110 |
| 8 | 3.2.1. Number and percent of TB cases successfully treated (all forms) by setting (i.e. private sector, pharmacies, prisons, etc.) and/or by population (i.e. gender, children, miners, urban slums, etc.). | Description: The proportion of a cohort of TB cases (all forms, bacteriologically confirmed and clinically diagnosed, new and relapse) registered in a specified period that were successfully treated, whether with bacteriologic evidence of success ("cured") or without ("treatment completed") by setting (i.e. private sector, pharmacies, prisons, etc.) and/or by population (gender, children, miners, urban slums, etc.) and/or risk population groups defined by national policy (IDUs, diabetics, prisoners, etc.). There may be overlap between settings and groups. Disaggregation by risk population is required in contexts where Challenge TB is providing treatment support for a specific group according to the annual work plan or in contexts where operations research allows for disaggregation and comparison across groups.<br><br>Indicator Value: Percent<br><br>Level: National and Challenge TB geographic areas<br><br>Numerator: Number of new and relapse TB cases (all forms) registered in a specified period that were cured or completed treatment<br>Denominator: Total number of new and relapse TB cases (all forms) registered in the same period | NA | > 95%<br><br>38,290/40,300<br><br>(6,840/7,200) CTB | 96% (36,356/38,034)<br><br>based on TB TWG meeting. The report was based on the reports from ODs. In the past NTP did not report TB case treatment success rate for all cases, instead they reported TSR for only TB smear positive cases. |
| 9 | 3.2.4. Number of MDR-TB cases initiating second-line treatment | Description: The number of bacteriologically confirmed, clinically diagnosed or unconfirmed MDR-TB cases started on second-line treatment during the | 121 (2013) | 145 | 90 Oct 15-Sep 16 |

| | | | | | |
|---|---|---|---|---|---|
| | | reporting period. Unconfirmed MDR-TB cases are those awaiting C/DST results. RR-TB may fall under confirmed or unconfirmed depending on the country's MDR-TB diagnosis algorithm.<br>Indicator Value: Number<br>Level: National and Challenge TB geographic areas<br><br>Numerator: The number of confirmed or unconfirmed MDR-TB patients started on second-line treatment in the reporting period | | | |
| 10 | 3.2.5. # health facilities w/ PMDT services | Description: This indicator measures PMDT service (i.e. diagnosis, treatment and/or care for MDR-TB patients) coverage by looking at the number of health facilities providing these services.<br>Indicator Value: Number<br>Level: National and Challenge TB geographic areas<br>Numerator: Number of health facilities providing PMDT services | 10 | 10 (100%) | 10 (100%) |
| 11 | 3.2.6. #/% of presumptive MDR-TB referrals that reach the PMDT site | Description: Proportion of presumptive MDR-TB referrals that reach the PMDT site in the reporting period<br>Indicator Value: Percent<br>Level: National and Challenge TB geographic areas<br>Numerator: Number of presumptive MDR-TB referrals that reach the PMDT site in the reporting period<br>Denominator: Total number of presumptive MDR-TB referrals in the reporting period | NA | 95% | 100% (170/170) CTB supported sites (Feb-Aug 16) |
| 12 | 3.2.7. Number and percent of MDR-TB cases successfully treated | Description: The proportion of confirmed MDR-TB patients successfully treated (cured plus completed treatment) among those enrolled on second line TB treatment during the reporting period (where applicable disaggregation by HIV status, XDR status). RR-TB may fall under confirmed MDR-TB depending on the country's MDR-TB diagnosis algorithm.<br>Indicator Value: Percent<br>Level: National and Challenge TB geographic areas<br>Numerator: Number of confirmed MDR-TB cases successfully treated (cured plus completed treatment)<br>Denominator: Total number of confirmed MDR-TB patients enrolled on second line TB treatment during the reporting period. | 79% (87/110; 2012) | >75% | 75% 91/121 (cohort 2013) |
| 13 | 3.2.19. Treatment success rate of TB patients diagnosed in prison | Description: The proportion of a cohort of new and relapse TB cases (bacteriologically confirmed and clinically diagnosed) registered in a specified period in prison that successfully completed treatment, whether with bacteriologic evidence of success ("cured") or without ("treatment completed").<br>Indicator Value: Percent<br>Level: National and Challenge TB geographic areas<br>Numerator: Number of new and relapse TB cases (all forms) registered in a specified | 92% (2013) | >92% | 93% (94/101) |

| | | | | | |
|---|---|---|---|---|---|
| | | period in prison that were cured or completed treatment.<br>Denominator: Total number of new and relapse TB cases registered in the same period in prison | | | |
| 14 | 3.2.24. % MDR patients who receive social or economic benefits | Description: Proportion of TB patients who receive any social or economic benefits (defined as tangible support through interventions delivering services, psycho-emotional support, material goods and/or financial assistances) during the first month of second-line drug (SLD) treatment.<br>Indicator Value: Percent<br>Level: National and Challenge TB geographic areas<br>Numerator: Number of MDR-TB patients who receive any social or economic benefits during the first month of SLD treatment<br>Denominator: Total number of MDR-TB patients initiating SLD treatment during the reporting period | NA | 175 | 186 |

## Objective 2. Prevention

### Sub-objective 4. Targeted screening for active TB

*The key result of this section had been described above in sub-objective 3. Indicators 4.1.1 and 4.1.2, had no targets set as there was no baseline information. However, the achievement was relatively high.*

| # | Outcome Indicators | Indicator Definition | Baseline (Year/ timefra me) | Target Y2 | Result Y2 |
|---|---|---|---|---|---|
| 1 | 4.1.1. #/% of eligible index cases of TB for which contact investigations were undertaken | Description: The proportion of eligible index cases of TB for which contact investigations were undertaken<br>Indicator Value: Percent<br>Level: National and Challenge TB geographic areas<br>Numerator: Number of index cases of TB for which contact investigations were undertaken during the period of assessment<br>Denominator: Total number of index cases registered during the period of assessment | NA (will be set in 2016) | TBD (in APA 3) | 71% (2,035/2, 884) |
| 2 | 4.1.2. #/% of children (under the age of five) who are contacts of bacteriologically-confirmed TB cases that are screened for TB | Description: The proportion of children (<5) who are contacts of bacteriologically-confirmed TB cases that are screened for TB (investigations for TB must be performed in accordance with existing national guidelines)<br>Indicator Value: Percent<br>Level: National and Challenge TB geographic areas<br>Numerator: Number of children (<5) who are contacts of bacteriologically-confirmed TB cases that are screened for TB<br><br>Denominator: Total number of children (<5) who are contacts of bacteriologically-confirmed TB cases | NA (will be set in 2016) | TBD | 91% (2,511/2, 743) |

## Sub-objective 5. Infection control

CTB introduced the "FAST" strategy for TB-Infection Control (IC) as a key intervention for TB-IC and prevention: **F**ind cases **A**ctively, **S**eparate safely, and **T**reat effectively. NTP and its partners, including CTB, implemented activities related to intensified and active case finding among high risk groups (prisoners, contacts, migrants etc.). All five RHs have implemented triage of patients and maintained separate wards for infectious patients. MDR-TB sites instituted isolation rooms. Rapid diagnostic testing (Xpert) was also introduced to improve early diagnosis and early initiation of treatment.

Cough triage was implemented in all 5 hospitals in which the hospital linkage activities are implemented. Separation areas were set up for coughing patients to avoid transmission. All patients with cough were provided with surgical masks and asked to sit in separate areas. They were given priority to rapidly meet health care providers for medical consultation including TB screening. Standing fans were also provided to RH and HC to be placed in the triage areas where patients were screened to create better airflow.

TB screening among health care workers in Battambang referral hospitals, photo credited by Ly Mena

**Key Results:**

In Year 2, a total of 70 standing fans were distributed to 29 HC and 7 RHs. Those fans have been placed in the triage areas to create airflow and minimize airborne disease transmission, including TB.

CENAT and CTB were able to conduct TB screening among health care workers (HCW) in Battambang RH. A symptom checklist, chest x-rays, and Xpert tests were used for screening and diagnosis. There were 390 staff in the hospital among whom 82% (320) HCW participated in the TB screening. Of those participating, 100% were screened by chest x-ray (320/320) and 8% (26/320) were tested with Xpert. All Xperts were negative, and no HCWs were diagnosed with TB.

*In this sub objective, all indicators have been achieved.*

| # | Outcome Indicators | Indicator Definition | Baseline (Year/ timeframe) | Target Y2 | Result Y2 |
|---|---|---|---|---|---|
| 1 | 5.1.1. Status of TB-IC implementation in health facilities | Description: This indicator measures the status of TB IC implementation in health facilities.<br><br>Indicator value: Score based on below: 0=no TB IC policy/plan and no organized TB IC activities; 1=national TB IC guidelines have been approved and disseminated in accordance with WHO policy; 2=TB IC being implemented in pilot or limited health facilities; 3=TB IC implemented nationally and/or national certification program implemented<br><br>Level: National | 2 | 2 | 2 |

| | | | | | |
|---|---|---|---|---|---|
| 2 | 5.1.2. #/% of health facilities implementing TB IC measures with Challenge TB support (stratified by TB and PMDT services) | Description: Proportion of health facilities implementing TB IC measures with Challenge TB support (stratified by TB and PMDT services)<br><br>Indicator Value: Percent<br><br>Level: National and Challenge TB geographic areas<br><br>Numerator: Number of health facilities implementing TB IC measures with Challenge TB support in the area<br><br>Denominator: Total number of health facilities in the area | 3.7%<br>15 /404 | 4.8%<br>18 /377 | 7%<br>26/371 |
| 3 | 5.2.3. Number and % of health care workers diagnosed with TB during reporting period | Description: This indicator measures the percent of healthcare workers (HCWs) diagnosed with TB (all forms) annually (disaggregated by gender and age). This measurement may require a special study using a validated tool and/or methodology.<br>Indicator Value: Percent<br>Level: National and Challenge TB geographic areas<br>Numerator: Number of HCWs diagnosed with TB (all forms) during past year<br>Denominator: Total number of HCWs in the same year<br>In countries where the NTP does not collect this indicator or is not willing to share the data, Challenge TB should document this challenge. | NA<br>(2014) | 6/250<br>(2.5%) | 0/320<br>(0%) |
| 4 | 5.2.6. #/% of HCW screened for TB | Description: This indicator measures the number and percent of targeted HCWs screened for active TB disease in the study targeted area during the specified period (time period to be specified). Note this measurement will be done through a separate study within core transmission project.<br>Indicator value: Percent<br>Level: The study targeted area<br>Numerator: Number of targeted HCWs screened for active TB disease in the study targeted area during the specified period<br>Denominator: Total number of targeted HCWs in the study targeted area | NA<br>(2014) | 250 | 320 |

## Sub-objective 6. Management of latent TB infection

During this reporting period, CTB with NTP staff conducted on-site supervision at HCs and RHs on contact investigation and the reading of CXR films. Children living in close contact to a smear (+) TB index patient were screened to rule-out active TB. If found to not have active TB, IPT for 6 months was prescribed, similar to the procedure for all PLHIV.

**Key Result:**

NTP developed a policy and guideline on the administration of IPT for PLHIV and children. This was implemented nationwide. In Year 2, 1,552 children (under 5 years old) were enrolled on IPT after ruling out active TB, 928 children were presumptive TB cases and were referred to RHs for clinical evaluation including TST, history and physical examination and chest x-ray. Among those referred, 174 (19%) were diagnosed with TB and initiated on treatment. Based on the 2014 cohort, 98% (152/154) of children on IPT completed preventive therapy.

- *In this sub-objective area, Indicator 6.1.1 was not achieved as the policy is implemented only in CTB areas and a few GF supported ODs.*
- *Indicator 6.1.11 data did not achieved target due to refusal of parents to allow their children to take IPT. This occurred in 20% of eligible cases.*
- *Indicator 6.1.13 was not achieved as the HC staff in some HC did not commit to conduct CI. CTB and NTP staff have increased their frequency of supervision to those HCs and to develop the CI investigation plan with them.*

| # | Outcome Indicators | Indicator Definition | Baseline (Year/ timeframe) | Target Y2 | Result Y2 |
|---|---|---|---|---|---|
| 1 | 6.1.1. Status of implementing LTBI diagnosis and treatment strategies (0=no policy or practice in place; 1=policies have been developed/updated; 2=LTBI strategies piloted or implemented in limited settings; 3=LTBI strategies implemented nationally | Description: This indicator measures the status of implementing LTBI diagnosis and treatment strategies in the country.<br><br>Indicator value: Score based on below: 0=no policy or practice in place; 1=policies have been developed/updated; 2=LTBI strategies piloted or implemented in limited settings; 3=LTBI strategies implemented nationally<br><br>Level: National | 2 | 3 | 2 Implemented in CTB supported sited Few ODs implemented under GF |
| 2 | 6.1.2. % of eligible persons completing LTBI treatment, by key population and adherence strategy | Description: This indicator measures the percent of eligible persons completing LTBI treatment, by key population and adherence strategy according to national policy<br>Indicator Value: Percent<br>Level: National and Challenge TB geographic areas<br>Numerator: Number of eligible persons completing LTBI treatment<br>Denominator: Total number of eligible persons | 95% (1965/2050) 2013 cohort, March 2015 report | > 95% | Unavailable |
| 3 | 6.1.11. Number of children under the age of 5 years who initiate IPT | Description: The number of children under the age of 5 years who initiate isoniazid preventive therapy (IPT) during the reporting period.<br>Indicator Value: Number<br>Level: National and Challenge TB geographic areas<br>Numerator: The number of children under the age of 5 years who initiate IPT during the reporting period. | 2,300 NTP report March 2015 | 2,300 | 1,554 |

## Objective 3. Strengthened TB Platforms

### Sub-objective 7. Political commitment and leadership

**Key Results:**

The total budget needed by NTP is around $30 million US dollars per year according to the current National Strategic Plan. Domestic contribution is currently about US$ 2.76 million and from donors, around US$ 5.9 million per year (from 2015 to 2017). The new funding model from GF is a 3 year grant starting from Jan 2015 to Dec 2017 which contributes $15.6 million (about US$ 5.3 million each year).[4,5] The total funding gap is US$16 million (51%) each year. Adequate local and external resources (financial and technical) must be mobilized to sustain program operations in the coming years.

With GF under the NFM, CENAT provides sub-grants to 5 sub-recipients (SR) namely Cambodian Health Committee (CHC), Catholic Relief Services (CRS), RHAC, Operation Asha and Health Poverty Action (HPA). CTB was involved in the grant making process and program management decisions with GFATM under NFM.

The national strategic plan for TB control 2015-2020 was finalized and endorsed by NTP.

- *All of these indicators were achieved.*

[4] GFATM at http://portfolio.theglobalfund.org/en/Grant/Index/KHM-T-CENAT

[5] Concept note to GFATM 2014, p16

| # | Outcome Indicators | Indicator Definition | Baseline (Year/ timeframe) | Target | Result |
|---|---|---|---|---|---|
| | | | | Y2 | Y2 |
| 1 | 7.1.2. Status of NSP development: 0=The NSP is expired or not being implemented; 1=An updated/new NSP is being drafted; 2=NSP has been developed and costed; 3=NSP has been finalized, endorsed by the government and implemented | Description: This indicator measures the status of NSP development.<br><br>Indicator value: Score based on below: 0=The NSP is expired or not being implemented;<br><br>1=An updated/new NSP is being drafted;<br><br>2=NSP has been developed and costed;<br><br>3=NSP has been finalized, endorsed by the government and implemented Level: National | 3 | 3 | 3 |
| 2 | 7.2.3. % of activity budget covered by private sector cost share, by specific activity | Description: This indicator measures the proportion of CTB project activity budget covered by private sector cost share (if not monetary, will require estimation of costs) by specific activity.<br><br>Indicator Value: Percent<br><br>Level: Nationally for activities at national scale and in Challenge TB geographic areas for activities focused in specific geographic areas where Challenge TB is working.<br><br>Numerator: Amount of private sector cost share covering CTB project activity during most recent fiscal year<br>Denominator: Total CTB project activity budget plus private sector cost share amount during the year of assessment. | NA (2014) | NA | 0 |

## Sub-objective 8. Comprehensive partnerships and informed community involvement

CTB staff are members of the Country Coordinating Committee (CCC) and the TB Principal Recipient-Technical Review Panel (PR-TRP). They are involved in key meetings to provide technical input and closely monitor the performance of the GF grant. In addition, CTB presented the findings of the annual TB analysis in many forums, including the ad hoc technical meeting, Annual TB Conference and in a meeting of the TB Interagency Coordinating Committee. CTB staff, including the WHO medical officer, worked with other partners to identify the key critical issues related to decrease in TB case notification in 2015. The result of the analysis was shared and discussed among the team and will be presented to the NTP director in November 2016.

**Key Results:**

The score of the GF rating is currently B1 level. The rating dropped from A1 to B1 due to the low achievement on two target: MDR case notification, children on IPT, and also a low burn rate. There is a representative from the TB civil society group on the CCM who actively participates in the meeting.

- *In this sub-objective area, Indicator 8.1.3 was not applicable for the country as there is no National Stop TB Partnership forum. However, NTP uses the Inter Coordinating Committee as a forum to coordinate and share information among TB partners. The meeting was organized regularly.*
- *Indicator 8.1.4 did not achieve the target as funding of both CATA and CHC was cut by other donors (GF and Pool fund on health system strengthening).*

- *Indicator 8.2.1 did not achieve the target due to a combination of factors, including low case notification of MDR TB, an insufficient number of children receiving IPT in GF areas and low overall burn rate.*

| # | Outcome Indicators | Indicator Definition | Baseline (Year/ timeframe) | Target Y2 | Result Y2 |
|---|---|---|---|---|---|
| 1 | 8.1.3. Status of National Stop TB Partnership | Description: This indicator measures the status of National Stop TB Partnership by using special questionnaire for collecting relevant country level data<br>Indicator Value: The score based on below:<br>0= no National Stop TB Partnership exists<br>1= National Stop TB Partnership established, and has adequate organizational structure; and a secretariat is in place that plays a facilitating role, and signed a common partnering agreement with all partners; but does not have detailed charter/plan, and does not meet regularly/ produce deliverables;<br>2= National Stop TB Partnership established, has adequate organizational structure and in a participatory way has developed detailed charter/plan, but does not meet regularly and does not produce deliverables;<br>3= National Stop TB Partnership established, has adequate organizational structure, has developed detailed charter/plan, meets regularly and critical deliverables are produced<br>Level: National | 0 (not exist until present) | NA | 0[6] |
| 2 | 8.1.4. % of local partners' operating budget covered by diverse non-USG funding sources | Description: This indicator measures the proportion of CTB project local partners' operating budgets covered by non-USG funding sources. A special questionnaire for collecting relevant country level data among CTB local partners is available.<br>Indicator Value: Percent<br>Level: Challenge TB geographic areas<br>Numerator: Amount of CTB local partners' operating budgets covered by non-USG funding sources (TGF, WB, EU, ADB, DFID, private donations, investment income, other revenue, etc.)<br>Denominator: Total operating budget of CTB local partners' operating budget (USG + non-USG sources) during the year of assessment. | 0 (2014) | 79% (1.46M/1.85M) | 29.7% (390,000 / 1,310,000) |
| 3 | 8.2.1. Global Fund grant rating | Description: This indicator presents Global Fund TB grant performance rating results<br><br>Indicator value: Score is based on the following:<br>A1 Exceeds expectations<br>A Good performance<br>A2 Meets expectations<br>B1 Adequate<br>B2 Inadequate but potential demonstrated<br>C Unacceptable<br>Level: National | A | A2 | B1 |

[6] Cambodia does not have a national Stop TB Partnership forum, but it has inter-agency coordination committee (ICC), which meets quite regularly on a quarterly basis. The ICC members include government, NGO partners and donors. It serves as a forum to share information, provide technical guidance and endorse policies, guidelines and key strategic approaches.

## Sub-objective 10. Quality data, surveillance and M&E

**a) National drug resistant survey (DRS)**

The NTP plans to conduct a DRS in 2016. Although data collection was originally scheduled to start in Dec 2016, this will be delayed until March or April 2017 due to the delayed procurement of lab reagents and materials. CTB has actively provided input into the design of the protocol for the DRS survey. CENAT made a request to CTB for TA support particularly related to TB culture and drug sensitive testing (DST). In response, CTB provided short term TA (JATA) to support them on two critical steps: (1) to assess and build lab capacity on culture and DST and review the list of equipment and reagents for the survey; and (2) to validate if staff are able to perform TB cultures and DST per recommendations. Two TA mission trips were organized to support NTP on this.

**Key Results:**

The survey protocol on DRS has been finalized in consultation with NTP staff, CTB and experts from WHO at HQ level. It has been submitted to GF for clearance. The result of the assessment on TB culture and DRS found that the recovery rate of all 3 labs, including the NRL, was approximately at 70%, which did not meet to the acceptable level. The consultant (Matsumoto Hiroko, JATA) instructed lab technicians on the procedure for culture and recommended a trial of culture and DST. During the validation of the trial, the result of all three labs improved with the recovery rate above 85%. The consultant concluded that these labs could be enrolled as sites for the study, but with close supervision.

b) **Data quality audit**

CTB also introduced a system for on-going, internal data quality improvement of NTP performance as a means for self-assessment, to enable cross-learning and serve as a data quality audit. In Year 2, four randomly selected ODs were visited. A joint team from NTP and CTB conducted Internal Data Quality Improvement (IDQI) at a total of 131 HCs of the nine ODs and provided recommendations for improvement to key staff of respective HCs visited. The recorded and verified values of the first visits were used as a baseline for the IDQI. The team used the same checklist to assess the completeness and accuracy of records at HCs in subsequent supportive monitoring visits. The second visit of IDQI to 39 HCs of three ODs: Korng Pisey, Prey Chhor and Tbong Khmum was conducted five months after the first visit.

**Key Results:**

Progress was documented between the first and the second visit of IDQI, with more complete and accurate recording of HC books and TB treatment cards of the visited HCs. The improvement of completeness and accuracy of TB HC books in HCs where a second visit was conducted varied from 4% to 19%.

c) **Review of PPM (Private Public Mix)**

The epidemiological assessment was conducted in September 2016 by the PPM consultant, D'Arcy Richardson. The consultant attended several meetings with NTP director and his staff, CTB team, NGOs previously working on PPM such as RHAC and Takhmoa OD. The review of past performance and field visits were conducted during the visit. A consultation meeting with CENAT key staff, WHO and CTB took place to discuss the findings and recommendations to plan future PPM interventions that were technically sound, practical and feasible to implement.

**Key Results:**

The final result of the assessment has been shared and discussed with the director of NTP. CTB held follow-up discussions with the NTP director to identify which recommendations were both feasible and practical to implement.

**d) Operational Research (OR)**

CTB has developed an OR protocol to assess additional yield and incremental cost efficiency on the SACF approach versus routine TB intervention, which is currently implemented under CTB coverage areas.

**Key Results:**

The protocol and tools were approved by both the FHI 360 Institutional Research Board (IRB) and the national ethics committee in Cambodia. However, it was recommended to change the research

objectives to assess the TB screening algorithm among elderlies. The new concept note had been approved by PMU and USAID. CTB revised the protocol and tools and will resubmit to both FHI 360 IRB and the national ethics board for their approval again.

– *In this sub-objective area, among 6 indicators, only three indicators (10.1.4, 10.2.3 and 10.2.6) were achieved. Among those achieved indicators, CTB contributed to 10.2.6.*

| # | Outcome Indicators | Indicator Definition | Baseline (Year/ timeframe) | Target | Result |
|---|---|---|---|---|---|
| | | | | Y1 | Y1 |
| 1 | 10.1.4. Status of electronic recording and reporting system | Description: This indicator measures the status of electronic recording and reporting (ERR)<br>Indicator value: Score based on below:<br>0=R&R system is entirely paper-based;<br>1=electronic reporting to national level, but not patient/case-based or real time;<br>2= patient/case-based ERR system implemented in pilot or select sites (TB or MDR-TB);<br>3=a patient/case-based, real-time ERR system functions at national and subnational levels for both TB and MDR-TB;<br>4= a patient/case-based, real-time ERR system is functional at national and subnational levels for both TB and MDR-TB completely and meets WHO standard for TB surveillance data quality - i.e., data in the national database are accurate, complete, internally consistent, within timelines set, validated and free of duplicates and a data quality audit system is put in place (source: Standards and Benchmarks for Tuberculosis Surveillance and Vital Registration Systems – Checklist and User Guide, WHO, 2014).<br>Level: National | 2 (2014) | 2 | 2 |
| 2 | 10.2.1. Standards and benchmarks to certify surveillance systems and vital registration for direct measurement of TB burden have been implemented | Description: National TB surveillance system is certified based on WHO standards and benchmarks for TB surveillance and vital registration systems (for paper-based or electronic systems). For a country's TB surveillance systems to be certified as providing a direct measurement of TB cases and TB deaths, all 10 standards and their associated benchmarks (Part B, Section 1) should be met (source: Standards and Benchmarks for Tuberculosis Surveillance and Vital Registration Systems – Checklist and User Guide, WHO, 2014). The country standards and benchmarks score will be monitored as a sub-indicator to track progress.<br>Indicator Value: Yes/No<br>Level: National | No (2014) | TBD | No |
| 3 | 10.2.3. DR-TB surveillance survey conducted/completed in the last 5 years | Description: DR-TB prevalence survey has been conducted/completed within the last five years<br>Indicator Value: Yes/No | No | Yes | Yes |

| | | | | | |
|---|---|---|---|---|---|
| 4 | 10.2.4. #/% of operations research, evaluation or epidemiological assessment study results disseminated (stratified by level of dissemination: report, presentation, publication) | Description: This indicator measures the number and percent of studies (operations research, evaluation or epidemiological assessment) with result that have been disseminated (stratified by level of dissemination: report, presentation, publication)<br>Indicator Value: Percent<br>Level: National<br>Numerator: Number of studies with results disseminated during the reporting period<br>Denominator: Total number of studies conducted during the reporting period | 0 (2014) | 2 (100%) | 0 |
| 5 | 10.2.6. % of operations research project funding provided to local partner (provide % for each OR project) | Description: This indicator measures the proportion of Challenge TB-supported operations research project funding provided to local partner(s), by each OR project.<br>Indicator Value: Percent<br>Level: Challenge TB geographic areas<br>Numerator: Amount of operations research project funding provided to local partner by Challenge TB during a year<br>Denominator: Total Challenge TB operations research budget during the year of assessment. | NA | 11% (16K/146K) | 11% (16,000/146,000) |
| 6 | 10.2.7. Operational research findings are used to change policy or practices (ex, change guidelines or implementation approach) | Description: For all Challenge TB-supported operation research projects implemented in a country, results of these projects are used to change policy or practices (ex. change guidelines or implementation approach). Relevant data are collected/ presented for each individual project by special report with qualitative details.<br><br>Indicator Value: Yes/No<br><br>Level: National | NA | NA | 0<br>No OR conducted |

## Sub-objective 11. Human resource development

The CTB team in Cambodia recognizes that repetitive trainings alone are not an effective use of precious resources. This year, CTB intensified its focus on targeted on-site coaching and supervision. The supervision and on-site coaching were targeted to sites with weak performance. The TA assistance focused on quality improvement of the project, including enhancement of case finding, quality of diagnosis, treatment, recording and reporting.

**Key Results:**

At the RH level, no training has been conducted for the RH staff this year, but on-site coaching was conducted.

At the HC level, **2,659 HC staff** from 356 health centers have received on-site coaching on how to conduct CI, perform semi ACF and ensure correct and complete information in the TB registration books.

At community level, **224 on-site coaching and supervision** were also conducted **to 2,180** VHSGs from **162 HCs**. Supervision focused on the use of the contact screening form, roles of VHSGs in referring TB close contacts to health centers for TB screening, diagnosis and IPT services.

| # | Outcome Indicators | Indicator Definition | Baseline (Year/ timeframe) | Target Y1 | Result Y1 |
|---|---|---|---|---|---|
| 1 | 11.1.2. % of planned supervisory visits conducted (stratified by NTP and Challenge TB funded) | Description: The proportion of planned supervisory visits conducted (stratified by NTP and Challenge TB funded)<br><br>Indicator Value: Percent<br><br>Level: National and Challenge TB geographic areas<br><br>Numerator: Number of planned supervisory visits conducted during reporting period<br><br>Denominator: Total number of supervisory visits planned for the same period | 69% (91/132) (CTB) | 322 /322 (100%) (CTB) | 340/322 (105%) |
| 2 | 11.1.3. # of healthcare workers trained, by gender and technical area | Description: This indicator measures the number of healthcare workers (which includes health facility staff, community health volunteers, laboratory staff, sputum transport technicians, community-based DOTS workers) trained, by gender and sub-objective. Training includes any in-person, virtual, or on-the-job training that is longer than half a day and for which curriculum is available. This indicator is interchangeable with 'Number of individuals trained in any component of the WHO Stop/End TB Strategy with USG funding' which USAID missions may have as a requirement for internal agency reporting.<br>Indicator Value: Number<br>Level: National and Challenge TB geographic areas<br>Numerator: Number of HCWs trained during the reporting period | NA | 3,935 | 3,610 (F=1173, M= 2,473) CTB supported sites. See data collection tool below for disaggregation by technical areas. |
|  | 11.1.5. % of USAID TB funding directed to local partners | Description: This indicator measures the proportion of CTB annual funding directed to local partners<br>Indicator Value: Percent<br>Level: National. Although CTB may be working with local partners in specific geographic areas, the overall total going to local partners at any level should be included in the numerator and compared to the overall country budget.<br>Numerator: Amount of CTB country project funding directed to local partners during the most recent fiscal year<br>Denominator: Total CTB country project budget during the most recent fiscal year. | NA (will be collected in 2016) | 18% (400K/2.2M) | 13% (390,000 /3,000,000) |

# 4. Challenge TB Support to Global Fund Implementation

## Current Global Fund TB Grants

| Name of grant & principal recipient *(i.e., Tuberculosis NFM - MoH)* | Average Rating* | Current Rating | Total Approved/Signed Amount** | Total Committed Amount | Total Disbursed to Date |
|---|---|---|---|---|---|
| NFM-2015 CENAT | A2 | B1 (June 21, 2016) | $15,664,272 | $8,073,508 | $6,589,427 |

** Since January 2011*

*** Current NFM grant not cumulative amount; this information can be found on GF website or ask in country if possible.*

## In-country Global Fund status - key updates, current conditions, challenges and bottlenecks

- During the first six months (Jan-Jun 2016), 5,523 new smear positive cases were diagnosed (8% increase over the same period in 2015), 16,316 cases of all forms (8% decline), 57 MDR-TB cases (63% increase). The case notification of drug susceptible and MDR TB did not achieve the target at 20,050 and 70 respectively during the period of Jan to June 2016. MDR-TB case finding targets were not met, which contributed to the downgrading of the overall GF rating in June 2016.
- During this period, the expenditure was 64% due to various factors, including constraints carrying out supervisory field visits at sub-national levels, which started in 2015. Earlier in 2016, GF eased the strict regulations on travel related costs, and supervisory activities started again during this period.
- Savings from 2015 was reprogrammed, and the reprogramming request was generally approved by GF in September. PR-CENAT needs to accelerate the implementation process for the rest of this year.
- Laboratory equipment and supplies procured through UNICEF has been delayed due to administrative factors involving PR-CENAT and UNICEF. The main issue was solved through the better communication between the two parties. The lesson learnt has made PR-CENAT to consider WHO for the future procurement partner, which was supported by GF.
- In preparation for the next GF application and the proposal development, expected in January 2017 onward, close dialogue between PR-CENAT and GF was initiated and coordinated.
- Until recently Cambodia received good ratings for GF grant management. From January 2010, the TB grant was given an average rating of A2 (meets expectations). The rating in 2012 was A1 (exceeds expectations) largely due to the good performance on MDR-TB case finding. However, the most recent rating in June 2016 dropped to B1. The rating was downgraded due to missed MDR TB case notification and childhood isoniazid preventive therapy (IPT) targets.

## Challenge TB involvement in GF support/implementation and any actions taken during Year 2

**a) CTB as part of the Oversight Committee of the Country Coordinating Committee (CCC-OC) and a partner agency:**

Challenge TB, through WHO, continues to be part of the CCC-OC for Global Fund grants in Cambodia. In this role, and as a partner to the Global Fund activities, CTB continues to:

- Attend all quarterly and ad hoc CCC-OC meetings, and some of the CCC and CCC ExCom meetings;
- Meet the Fund Portfolio Manager and her team during all their visits;
- Respond to the needs of the Principal Recipient, CCC and the Global Fund;
- Guide the Principal Recipient and its sub-recipients in grant implementation;
- Assist the country to use Global Fund grants to procure drugs (through Global Drug Facility), and diagnostics (laboratory equipment and supplies through UNICEF;
- Monitor the grant and provide feedback to the decision-makers and Global Fund.

b) One example of CTB collaboration is in the area of IPT. IPT is currently implemented only through CTB support and is not included in the GF package. To respond to the missed IPT target and drop in GF rating, CTB will maximize its efforts in APA3 to contribute to further contribute to the IPT GF target.

### c) CTB as member of the principal recipient technical review panel (PR-TRP)

CTB continues to participate in the PR-TRP of Global Fund grants in Cambodia through the WHO CTB Medical Officer. As a member, CTB provides technical input at the meetings. CTB follows up, if the target was not achieved, if activity implementation is delayed or if the burn rate of the grant is inadequate. CTB will also share lessons learned from CTB project activities with the GF team.

## 5. Challenge TB Success Story
## Lives saved by screening the neighbors of a TB patient

The majority of TB cases occur among the poor, whose access to proper TB diagnosis and treatment is often constrained by both medical and social barriers. For example, many of the poor lack education, have little money for transportation, and even feel intimidated by local health care providers.

Mr. KR and Ms. SC, aged 51, are good examples. They both had a chronic cough and fever for nearly a month, but they didn't have enough money for transportation and were afraid to go to the health center because preference is given to those with money, and the poor are often ignored.

Challenge TB is working with the government's TB program to increase TB case finding, by screening the families and close contacts of patients with active pulmonary TB. Chrok Chambok village, in Tbong Khmum province, is one of thousands of villages covered by the CTB project, where screening the households of TB patients began in December 2015.

Mr. Soeng Srean, a TB health worker from Chup HC whom Challenge Tb trained to perform TB screenings among close contacts of known TB patients, was screening a house close to that of Mr. KR and Ms. SC. Seeing this opportunity, they asked if they could join the TB screening. Soeng found that they had symptoms suggestive of TB and asked them to provide a sputum sample which could be tested.

One week later, the test results confirmed they both had TB and soon as Soeng got the results, he informed them and started them on treatment. They were extremely grateful to Soeng for his assistance, "We think that we would have died if we hadn't been checked", said the couple.

Soeng said that screening for TB at the homes of known TB patients finds many more cases, as many poor people do not seek medical help until their illness is very advanced, and often too late for treatment. "This approach increases accessibility to quality TB services. The interaction between health care providers and community leads to an increase in TB awareness in the community, and in the use of health care services. As a result, it saves people's lives and will help to eliminate TB in Cambodia by 2030," said Srean.

Mr. Khon Boran, a village volunteer for more than 12 years, provides directly observed treatment (DOTS) in Chrok Chambok. He said that his village has a lot of TB patients and that if someone in the village has TB, others will be infected. This approach identifies more TB cases and stops further transmission.

"I want to disseminate information to prevent transmission and eliminate TB in my village," he said.

A couple with TB recovers after three months of TB treatment. They are again able to work as mushroom growers, and to feed themselves and their children.

The photo is used with the permission of the patients. Photo credited by: Ngo Menghak

## 6. Operations Research

| Title of OR study | Local partners involved in study | Implementation Status | Key findings | Dissemination |
|---|---|---|---|---|
| Active case finding for tuberculosis among elderly people in Cambodia: Determining an appropriate screening and diagnostic algorithm | NTP and CATA | The first protocol and tools which aligned with the approved workplan have been developed and approved by FHI 360's IRB and the national ethic committee. However, it was recommended to revise the objectives of the study. The concept note of the study has been endorsed by USAID and PMU. CTB is currently revising the protocol based on the concept note. | N/A | N/A |

# 7. Key Challenges during Implementation and Actions to Overcome Them

| Challenge | Actions to overcome challenges |
|---|---|
| **Technical** | |
| a) **OR study:** We have not been able to conduct the OR as we received recommendations to change the study objective from the originally agreed and approved one. The protocol and tools then required modification and IRB re-submission was necessary. This has been a huge effort entailing extra effort and causing delay in implementation. | **Actions:** Concept note on the revised objective and methodology of OR have been developed. Consensus was obtained from all relevant partners and USAID. With this agreement, we anticipate a quicker approval process for protocol and tools. |
| **b)** Low MDR case notification: CENAT's reimbursement system for sputum transportation of suspected MDR TB cases for Xpert and culture is suboptimal. Additional limitations of the system include: misclassification of TB cases (e.g. retreatment cases may be classified as new cases), insufficient supportive supervision and lack of follow-up after referral of presumptive MDR TB patients. These challenges may help explain the decline in MDR case notifications. | **Actions:** As a short-term solution, CTB will work with sites where hospital engagement is implemented to pilot a financial support system. This includes quicker and faster reimbursements and clear instructions on the need for supporting documents for financial reimbursement. As a long-term solution, CTB will work with CENAT to evaluate the system and propose a way forward. CTB staff will jointly conduct supervision activities with the TB supervisor from central or provincial levels to correct diagnostic misclassification, and to improve enrollment of MDR TB patient referrals by developing a feedback mechanism |
| c) Lack of **CXR readers and reading capacity** has been a concern in Cambodia. As the epidemic has changed – TB case may be detected earlier. CXR will not only be used for screening, but more often as a diagnostic tool. | **Actions:** WHO, CTB had made a draft concept note to improve CXR skills of technicians. This needs to be endorsed by the director of NTP. CTB will follow-up and ensure that this training is organized next year. |
| d) TB mortality has become a critical outcome indicator for the Global Fund. Recent analysis show that health care providers are not using international formats for medical certification of cause of death. In addition, community councils do not classify mortality data by cause. | **Actions:** Through our WHO partner, CTB is supporting an effort to improve this situation by drafting a concept note with CENAT and Global Fund to strengthen the accuracy of recorded cause of mortality and subsequent data analysis. |
| e) TB case notification is not reaching targets in part due to changes in the epidemiology of TB, as shown by the 2011 prevalence survey (e.g., lower prevalence of bacteriologic confirmed TB, hence general TB and the epidemic is increasingly concentrated in hard-to-reach populations). | **Action:** To fine-tune the screening and diagnostic approaches to the epidemiological changes, and to overcome the barriers to TB care, CTB has been advising the government and its partners to use multi-symptom screening, enhanced case finding and increased use of Xpert for the past few years. The country is scaling-up these approaches gradually. However, inadequate resources are limiting these efforts. |

| Administrative | |
|---|---|
| f) It has been very challenging to ensure CXR for TB suspects with negative results on smear and Xpert. The majority of them are poor and not able to afford the cost of transportation. | **Actions:** CTB has discussed with partners ECH and SHP projects, USAID bilateral grants, to support this. They have now agreed. However, there are still many challenges for the transition. SHP manages and coordinates the health equity fund and ECH works with the community to increase the access to health service. |

# 8. Lessons Learnt/ Next Steps

The successes and challenges of USAID's CTB project provides valuable information to guide priorities for future funding. The largest technical area, "improved access", includes activities that were high impact such as semi active case finding among elderlies, contact investigation and ACF among elderlies and prisoners.

A high proportion of TB cases were identified through case-finding in **the congregate setting**, **hospital setting, and community**. Whether these strategies are cost-effective needs to be analyzed, particularly with scale-up and sustainability as future goals—although they certainly appear very promising.

**Prisons:** Active case finding in prisons contributes to the increase of case notification rates and has an impact on the reduction of TB prevalence over the project years (decrease from 2.2% to 1.5% in 2013 and 2015 respectively). The screening for TB symptoms at entry needs to be maintained as it helps to prevent the entry of TB in the prison with subsequent spread of TB. Operationalizing of NTP's Standard Operating Procedures in the prison setting needs to be review and re-enforced across all prisons in Cambodia. With the current political concerns and restrictions, there is a need for a policy that enables TB staff working with collaborating partners including CENAT, OD, PHD and CTB to access patients in need of care, as well as clear mechanisms for diagnostic testing (sputum transport, chest X-rays, etc.). With a multitude of competing priorities in the prison setting, health issues in general and TB specifically may not receive the attention and resources needed. ACF activities are critical, but they are also expensive and currently, totally dependent upon external donors. Our success may be jeopardized, if there is not continued attention and support for these efforts.

**Laboratory:** Some activities within "Improved Access" had variable impact such as the laboratory's external quality assurance (EQA). EQA results show a high performance (<5% of false positive or false negative). Even the smear preparation and reading accuracy were high, but the quality of sputum collection needs to be strengthened as it impacts the results. Sputum collection and the method of collecting high quality sputum needs to be decentralized with more training at the VHSG level. While NTP has scaled-up the use of Xpert machines for TB testing, TA on trouble shooting and calibration is needed to ensure that the quality of test results are accurate and the operation of machines runs smoothly.

The **PMDT** technical area is a prime area where more remains to be done. The country's treatment success rate for MDR-TB has been maintained at an average of >75% with >90% of those diagnosed started on treatment. There is, however, a significant diagnostic gap that must be addressed. In the first two quarters of FY16, the case notification of MDR-TB (n=58) was improved compared to the same time period in the previous year. However, the number of MDR suspects referred for Xpert and DST was reduced.

The biggest challenge in Cambodia is the **missing cases** of both drug-susceptible and drug-resistant TB. In contrast, NTP has been very successful in initiating treatment, thus there is no significant treatment gap in Cambodia at this time. In addition, treatment success rates have been consistently high for both drug-susceptible and drug-resistant TB, highlighting the successful strategies for effective treatment support- through decentralization of DOTs, effective mobilization of the

community, and well-coordinated multi-disciplinary teams that conduct home visits and support patients.

The persistent high prevalence rates among both men and women > 45 years old emphasizes the urgency to reach the middle-aged and the elderly (>55), a risk group that has not been effectively diagnosed in the current health system. The prevalence of smear-positive and bacteriologically positive TB in the elderly is approximately four times that of the general population, and although the elderly constitutes 4% of the population, they comprise 24% of those with TB. Asymptomatic patients, both AFB smear positive and negative, also comprise an unreached population, pointing to the need for improved active case finding among certain at-risk groups. Smear-negative patients, in addition, face challenges in diagnosis given the dependence on chest x-ray, which is subject to reader interpretation.

**PPM** is currently lacking in Cambodia, due to a lack of targeted funding. However, CTB's analysis suggests that an approach involving private providers is likely to increase early TB detection, although might not lend overall additionality.[7]

## Next steps:

**Coordination and collaboration with government and stakeholders:** CTB only supports TA while commodities, drugs and laboratory supplies and equipment are supported from either government or other donors (e.g. GF). The successes that were mentioned above depend on the availability of those commodities, including the availability of well-working Xpert machines, cartridges, microscopes, reagents and TB drugs which are currently supported by GF. Therefore, close collaboration between CTB, NTP, PHD, HC and VHSG are critical for the success of CTB project.

**Community DOTs:** The semi-ACF targeting elderly people and Ajar in the pagoda setting has demonstrated a promising approach to reach the elderly in rural settings and has identified a remarkable number of TB cases. This activity requires VHSG and HC staff to plan and implement this activity in their community at lower cost. The same strategy applies to contact investigation. These approaches bring the services to the community rather than requiring patients to seek care in health services at either HCs or RHs. More human resources are required at the HC level to ensure that these activities are well conducted at the community level.

As was demonstrated in the last TB prevalence survey conducted in 2011, higher prevalence rates exist in rural areas, which parallels high rates of poverty in the same regions of the country. In the rural setting, long distances from home to health facilities, lower population density, and low vaccination coverage all contribute to difficulty in accessing the health system. Given that 80% of the country is categorized as rural, reaching the rural poor may be one important focus for future funding. As shown in the figure 5 (below), case notifications (blue dots) are lower in areas with higher poverty rates: household poverty rates are associated with a decrease in sputum-positive TB case notification in Cambodia. This necessitates geo-targeting of people who are at high risk for TB, using a multi-symptom screening approach combined with more sensitive diagnostic tools such as X-ray and Xpert. In this regard, CTB will continue to maintain focus on semi ACF and CI in those rural settings which target the at-risk population.

**MDR-TB:** Even though the estimated number of MDR-TB is still low and treatment success rate is relatively high, the severity and negative impact of the disease are huge and require continued attention. Additionally, it was identified that GF future funding may be reduced or eliminated in up-coming years, so support from both require an increased commitment from the government to spend domestic funds and support from other donors is necessary. The country also needs to introduce and scale up the new MDR-TB drugs, Bedaquiline and Delaminid along with the shorter MDR-TB regimen, in order to further increase the treatment success rate, reduce unacceptable side

[7] PPM review implemented by TBCARE I and other NGOs, September 2016.

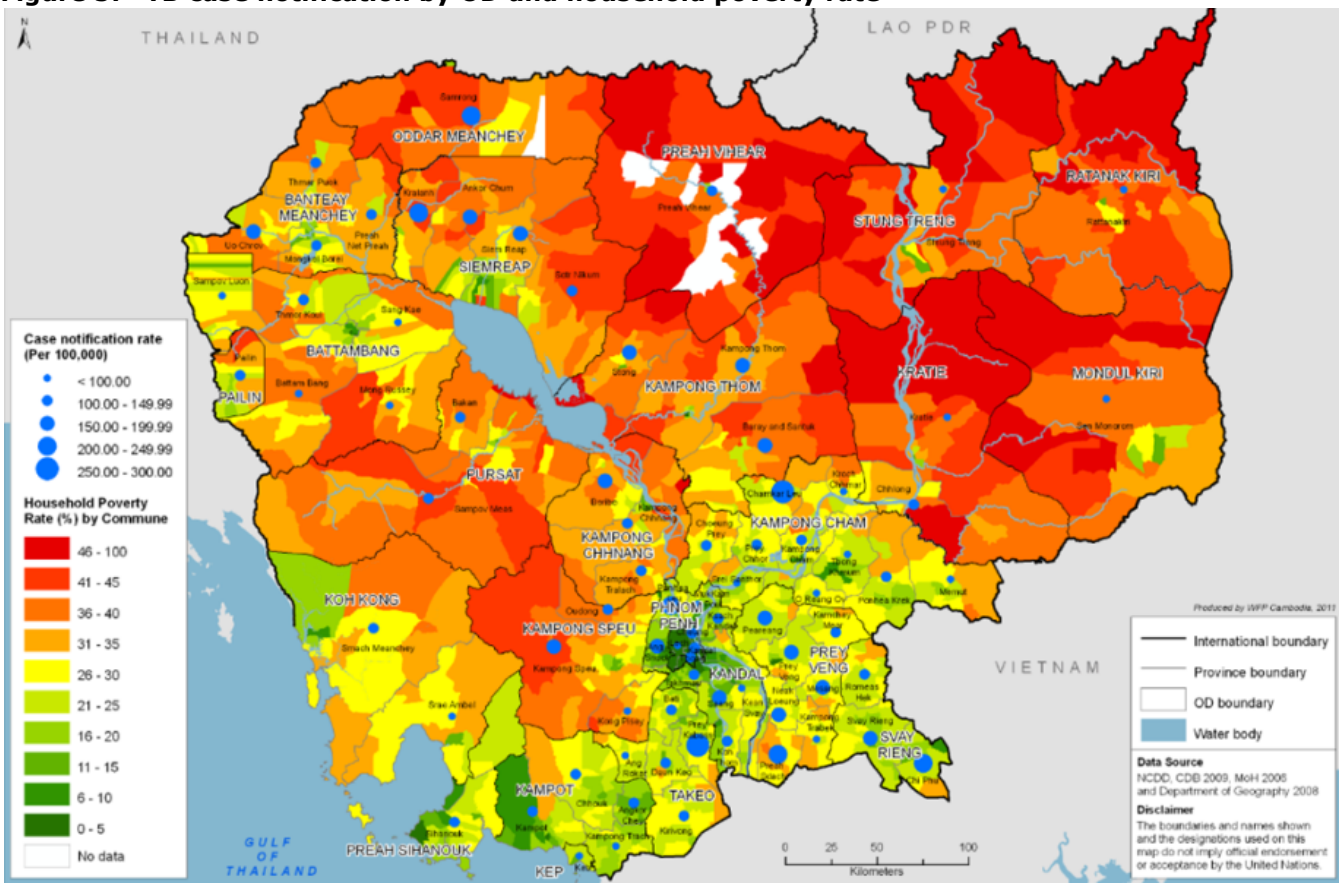
effects and limit the duration of treatment. CTB is committed to assist with these efforts, if funding levels allow.

**Prison setting:** Even though the TB CNR in prison decreased in recent years, it is still significantly higher than that of the general population. These TB control activities in correctional facilities are currently completely dependent on external donors. Therefore, we need to maintain our gains while identifying a strategy to phase-out the activity under CTB. CTB will discuss with CENAT and other partners to assume responsibility for the prison activities which CTB supported in year 2.

**Hospital engagement:** The hospital engagement approach provides a high yield of TB case notification; this also needs to be maintained and streamlined into routine services. This activity should be conducted in collaboration with USAID's Quality Health Services for synergistic effects at the hospital level and with Empowerment Community for Health for linkages to referrals between the community and health facility level.

**Laboratory:** CTB will continue TA support across this area from the development of guidelines, standard operating procedures, EQA and monitoring support. These are important activities that ensure the quality of TB diagnosis. As the NTP scales-up the use of Xpert machines in this and next year, our continued support regarding the orientation on the operation of the machine to laboratory staff and troubleshooting of Xpert will be critical.

**Figure 5: TB case notification by OD and household poverty rate**



## Annex I: Year 2 Results on Mandatory Indicators as well as National Data on the Number of pre-/XDR-TB Cases Started on Bedaquiline or Delamanid

| MANDATORY Indicators | | | | |
|---|---|---|---|---|
| *Please provide data for the following mandatory indicators:* | | | | |
| **2.1.2 A current national TB laboratory operational plan exists and is used to prioritize, plan and implement interventions.** | **National APA 2** | **CTB APA 2** | **CTB APA 2 investment** | **Additional Information/Comments** |
| **Score** as of September 30, 2016 | 1 | N/A | **limited** | Operational plan for lab has been integrated into the annual operational plan, which is developed on an annual basis, at the end of the year. The budg is not sufficient from donors including G and the allocation of the national budg was also insufficient. So, it will be hard meet the plan's targets. |
| **2.2.6 Number and percent of TB reference laboratories (national and intermediate) within the country implementing a TB-specific quality improvement program i.e. Laboratory Quality Management System** | **National APA 2** | **CTB APA 2** | **CTB APA 2 investment** | **Additional Information/Comments** |
| **Number and percent** as of September 30, 2016 | 0<br>0/3<br><br>1NRL<br>2RRL | 0 | **Limited** | There is just one National TB Reference Lab in the country, implementing only EQA, not LQMS (no GLI or SLIMTA scor was conducted).<br>- EQA SOP has not been reviewed due the lack of endorsement from lab direc<br>- EQA was conducted in the first quarte of APA 2. CTB supported targeted TA to sites where the lab was found to demonstrating poor EQA performance.<br>-13%(28/215) of microscopic health centers with low scores on EQA have b supervised and coached. |

| **2.2.7 Number of GLI-approved TB microscopy network standards met** | **National APA 2** | **CTB APA 2** | **CTB APA 2 investment** | **Additional Information/Comments** |
|---|---|---|---|---|
| **Number of standards met** as of September 30, 2016 | 4<br>#2,3,6,11 | N/A | **None** | No investment to address the Microscopy network by any partn to impact these standards. |
| **2.3.1 Percent of bacteriologically confirmed TB cases who are tested for drug resistance with a recorded result.** | **National 2015** | **CTB 2015** | **CTB APA 2 investment** | **Additional Information/Comments** |
| **Percent (new cases)**, include numerator/denominator | 258 | N/A | **None** | Denominators for new and previ treated cases are not available |
| **Percent (previously treated cases)**, include numerator/denominator | 1,539 | N/A | | |
| **Percent (total cases)**, include numerator/denominator | (17.5%)<br>1,797/10,280 | N/A | | |
| **3.1.1. Number and percent of cases notified by setting (i.e. private sector, pharmacies, prisons, etc.) and/or population (i.e. gender, children, miners, urban slums, etc.) and/or case finding approach** | **National APA2** | **CTB APA2** | **CTB APA 2 investment** | **Additional Information/Comments** |
| **Number and percent** | *Fill in data in "Ind 3.1.1 - APA 2" worksheet* | *Fill in data in "Ind 3.1.1 - APA 2" worksheet* | | |
| **3.1.4. Number of RR-TB or MDR-TB cases notified** | **National APA 2** | **CTB APA 2** | **CTB APA 2 investment** | **Additional Information/Comments** |
| Total 2015 | 77 | N/A | **Limited** | Data not yet available from CTB areas. We hope to have these so |
| *Jan-Mar 2016* | 29 | U | | |
| *Apr-June 2016* | 29 | U | | |
| *Jul-Sept 2016* | 20 | U | | |
| To date in 2016 | 78 | 0 | | |

| **3.2.1. Number and percent of TB cases successfully treated (all forms) by setting (i.e. private sector, pharmacies, prisons, etc.) and/or by population (i.e. gender, children, miners, urban slums, etc.).** | **National 2014 cohort** | **CTB 2014 cohort** | **CTB APA 2 investment** | **Additional Information/Comments** |
|---|---|---|---|---|
| **Number and percent** of TB cases successfully treated in a calendar year cohort | Getting from WHO | U | **Limited** | 96% (36,356/38,034) based on T TWG meeting. The report was based on the rep from ODs. In the past NTP did no report TB case treatment succes rate for all cases, instead they reported TSR for only TB smear positive cases. |
| **3.2.4. Number of patients started on MDR-TB treatment** | **National APA 2** | **CTB APA 2** | **CTB APA 2 investment** | **Additional Information/Comments** |
| Total 2015 | 75 | 75 | **Moderate** | CHC provides supports to all 11 I treatment sites under CTB sub-g |
| Jan-Mar 2016 | 29 | 29 | | |
| Apr-June 2016 | 29 | 29 | | |
| Jul-Sept 2016 | 20 | 20 | | |
| To date in 2016 | 78 | 78 | | |
| **3.2.7. Number and percent of MDR-TB cases successfully treated** | **National 2013 cohort** | **CTB 2013 cohort** | **CTB APA 2 investment** | **Additional Information/Comments** |
| **Number and percent** of MDR-TB cases successfully treated in a calendar year cohort | Getting from WHO | 75% (91/121) | **Moderate** | CHC provide supports to all 11 M treatment sites under CTB sub-g |
| **5.2.3. Number and % of health care workers diagnosed with TB during reporting period** | **National 2015** | **CTB 2015** | **CTB APA 2 investment** | **Additional Information/Comments** |
| **Number and percent** reported annually | U | U | **Limited** | TB screening among HCWs was conducted in Battambang hospita under CTB coverage area. 320 H were screened. We are still work to get the number of how many were found to have clinically diagnosed active TB. |
| **6.1.11. Number of children under the age of 5 years who initiate IPT** | **National 2015** | **CTB 2015** | **CTB APA 2 investment** | **Additional Information/Comments** |

| | | | | |
|---|---|---|---|---|
| **Number** reported annually | 1,104 | 1,104 | **Moderate** | 2015 calendar year. |
| **7.2.3. % of activity budget covered by private sector cost share, by specific activity** | **National APA 2** | **CTB APA 2** | **CTB APA 2 investment** | **Additional Information/Comments** |
| **Percent** as of September 30, 2016 (include numerator/denominator) | N/A | 0 | **None** | PPM review was conducted by D' Richardson, consultant, and recommendations were made. C will work with NTP to finalize for implementation in year 3. |
| **8.1.3. Status of National Stop TB Partnerships** | **National APA 2** | **CTB APA 2** | **CTB APA 2 investment** | **Additional Information/Comments** |
| **Score** as of September 30, 2016 | N/A | N/A | **None** | Cambodia does not have a natio Stop TB Partnership forum, but i has inter-agency coordination committee (ICC), which meets q regularly on quarterly basis. The ICC members include governmer NGOs partners and donors. It serves as a forum to share information, provide technical guidance and endorse policies, guidelines and key strategic approaches. |
| **8.1.4. % of local partners' operating budget covered by diverse non-USG funding sources** | **National APA 2** | **CTB APA 2** | **CTB APA 2 investment** | **Additional Information/Comments** |
| **Percent** as of September 30, 2016 (include numerator/denominator) | N/A | CATA= 90% (160,000/168,000) CHC= 20% (230,000/1,160,000) | **Moderate** | CTB provides funding to two loca NGO's, CATA and CHC, to implen TB control activities. Approxima 20% of CHC and 90% of CATA budgets are funded by CTB. |
| **8.2.1. Global Fund grant rating** | **National APA 2** | **CTB APA 2** | **CTB APA 2 investment** | **Additional Information/Comments** |

| | | | | |
|---|---|---|---|---|
| **Score** as of September 30, 2016 | B1 | N/A | **Moderate** | Both FHI 360 and its partner (WI have invested themselves as members of Principal Recipient o Technical Review Panel and coun coordinating committee and are actively involved providing techn input on grant management, program implementation and buc expense. |
| **9.1.1. Number of stock outs of anti-TB drugs, by type (first and second line) and level (ex, national, provincial, district)** | **National APA 2** | **CTB APA 2** | **CTB APA 2 investment** | **Additional Information/Comments** |
| **Number** as of September 30, 2016 | **0** | N/A | **None** | CTB will not be working in this ar but CTB will monitor and ensure there is no stock out in CTB supported sites.<br>Data source: Presentation at the 21th Annual TB Conference, 16-1 May 2016, Phnom Penh, Cambod |
| **10.1.4. Status of electronic recording and reporting system** | **National APA 2** | **CTB APA 2** | **CTB APA 2 investment** | **Additional Information/Comments** |
| **Score** as of September 30, 2016 | 2 | N/A | **None** | CTB will collaborate with CENAT Palladium to provide technical inp during the development, piloting scale up the system. No financi resources are needed. |
| **10.2.1. Standards and benchmarks to certify surveillance systems and vital registration for direct measurement of TB burden have been implemented** | **National APA 2** | **CTB APA 2** | **CTB APA 2 investment** | **Additional Information/Comments** |
| **Yes or No** as of September 30, 2016 | No | N/A | **None** | |
| **10.2.6. % of operations research project funding provided to local partner (provide % for each OR project)** | **National APA 2** | **CTB APA 2** | **CTB APA 2 investment** | **Additional Information/Comments** |

| | | | | |
|---|---|---|---|---|
| **Percent** as of September 30, 2016 (include numerator/denominator) | N/A | 69% (160,000/229,000) | **Moderate** | The OR protocol was developed a approved by the local and FHI 36 ethics. However, USAID has ma suggestion to change the overall objectives of the study. Therefo was not possible to conduct OR t year. The revised objective and concept note of OR was recently endorsed by USAID and PMU and protocol was developed. CTB will for field data collection in APA3. |
| **10.2.7. Operational research findings are used to change policy or practices (ex, change guidelines or implementation approach)** | **National APA 2** | **CTB APA 2** | **CTB APA 2 investment** | **Additional Information/Comments** |
| **Yes or No** as of September 30, 2016 | N/A | N/A | **None** | No research was conducted |

| **11.1.3. Number of health care workers trained, by gender and technical area** | **CTB APA 2** | | **CTB APA 2 investment** | **Additional Information/Comments** |
|---|---|---|---|---|
| | | | **Moderate** | **CTB provided capacity buildin via coaching and supervision health care workers at HC an RH on contact investigation, intensification of case finding tools for recording and report and diagnosis on childhood T** |
| | **# trained males APA 2** | **# trained females APA 2** | **Total # trained in APA 2** | **Total # planned trainees in A 2** |
| 1. Enabling environment | **0** | **0** | **0** | **0** |
| 2. Comprehensive, high quality diagnostics | **56** | **24** | **80** | **40** |
| 3. Patient-centered care and treatment | **755** | **480** | **1235** | **450** |
| 4. Targeted screening for active TB | **1048** | **510** | **1558** | **2850** |
| 5. Infection control | **0** | **0** | **0** | **0** |
| 6. Management of latent TB infection | **382** | **122** | **504** | **400** |
| 7. Political commitment and leadership | **0** | **0** | **0** | **0** |
| 8. Comprehensive partnerships and informed community involvement | **0** | **0** | **0** | **0** |

| | | | | |
|---|---|---|---|---|
| 9. Drug and commodity management systems | **0** | **0** | **0** | **0** |
| 10. Quality data, surveillance and M&E | **196** | **37** | **233** | **195** |
| 11. Human resource development | **0** | **0** | **0** | **0** |
| Other (explain) | **0** | **0** | **0** | **0** |
| Other (explain) | **0** | **0** | **0** | **0** |
| **Grand Total** | **2437** | **1173** | **3610** | **3935** |

| **11.1.5. % of USAID TB funding directed to local partners** | **National APA 2** | **CTB APA 2** | **CTB APA 2 investment** | **Additional Information/Comments** |
|---|---|---|---|---|
| **Percent** as of September 30, 2016 (include numerator/denominator) | N/A | 13% (390,000/3,000,000) | **Moderate** | CTB provided funding to local NG CATA and CHC, to implement TB control activities. 13% of CTB budget was directly funded to th two local NGOs. |

| **Year/Quarter** | **Number of pre-/XDR-TB cases started on BDQ nationwide** | **Number of pre-/XDR-TB cases started on DLM nationwide** | **CTB APA 2 investment** | **Additional Information/Comments** |
|---|---|---|---|---|
| Total 2014 | 0 | 0 | **None** | ND&R has not implemented in th country and new drugs are not available. |
| Total 2015 | 0 | 0 | | |
| Jan-Mar 2016 | 0 | 0 | | |
| Apr-Jun 2016 | 0 | 0 | | |
| Jul-Aug 2016 | 0 | 0 | | |
| To date in 2016 | 0 | 0 | | |

| Number and percent of cases notified by setting (i.e. private sector, prisons, etc.) and/or population (i.e. gender, children, miners, urban slums, etc.) and/or case finding approach (CI/ACF/ICF) (3.1.1) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | Reporting period | | | | | CTB APA 2 investment |
| | | Oct-Dec 2015 | Jan-Mar 2016 | Apr-Jun 2016 | Jul-Sept 2016 | Cumulative Year 2 | |
| Overall CTB geographic areas | TB cases (all forms) notified per CTB geographic area *(List each CTB area below - i.e. Province name)* | | | | | | Moderate |
| | Battambang (3 ODs) | 499 | 467 | 473 | 469 | 1,908 | |
| | Kampot (1 OD) | 2 | 3 | 2 | 20 | 27 | |
| | Kampong Cham (4 ODs) | 44 | 70 | 112 | 514 | 740 | |
| | Kampong Chhnang (2 ODs) | 23 | 13 | 15 | 63 | 114 | |
| | Kampong Speu (2 ODs) | 400 | 368 | 588 | 515 | 1,871 | |
| | Kampong Thom (1 OD) | 4 | 6 | 11 | 23 | 44 | |
| | Prey Veng (5 ODs) | 163 | 129 | 97 | 211 | 600 | |
| | Pursat (2 ODs) | 236 | 233 | 536 | 268 | 1,273 | |
| | Svay Rieng (1 OD) | 39 | 32 | 96 | 207 | 374 | |
| | Tbong Khmum (1 OD) | 29 | 30 | 50 | 52 | 161 | |
| | TB cases (all forms) notified for all CTB areas | 1439 | 1351 | 1980 | 2,342 | 7,112 | |
| | All TB cases (all forms) notified nationwide (denominator) | 7986 | 8336 | 8109 | Data not available | 24,431 | |
| | % of national cases notified in CTB geographic areas | 18% | 16% | 24% | | 28% | |
| Intervention (setting/population/approach) | | | | | | | |
| Children (0-14) | CTB geographic focus for this intervention | CTB geographic focus for this intervention: Battambang, Kampot, Kampong Cham, Kampong Chhnang, Kampong Speu, Kampong Thom, Prey Veng, Pursat, Svay Rieng, Tbong Khmum. | | | | | Moderate |
| | TB cases (all forms) notified from this intervention | 444 | 412 | 519 | 723 | 2,098 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | All TB cases notified in this CTB area (denominator) | 1423 | 1351 | 1965 | Data not available | |
| | % of cases notified from this intervention | 31% | 30% | 26% | | |
| Intensified case finding (ICF) (e.g. health facility-based case finding) | CTB geographic focus for this intervention | Five hospitals of Battambang, Moung Russey, Sampove Meas, Kampong Speu and Korng Pisey | | | | |
| | TB cases (all forms) notified from this intervention | 238 | 190 | 190 | 187 | 805 |
| | All TB cases notified in this CTB area (denominator) | 1021 | 937 | 1139 | 853 | 3,950 |
| | % of cases notified from this intervention | 23% | 20% | 17% | 22% | 20% |
| Choose an item. | CTB geographic focus for this intervention | | | | | 0 |
| | TB cases (all forms) notified from this intervention | | | | | 0 |
| | All TB cases notified in this CTB area (denominator) | | | | | 0 |
| | % of cases notified from this intervention | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! | #DIV/0! |

## Annex II: Status of EMMP activities

| Year 2 Mitigation Measures | Status of Mitigation Measures | Outstanding issues to address in Year 3 | Additional Remarks |
|---|---|---|---|
| Store, use and disposal of used syringes and needles according to manufacturer's and Ministry of Health (MoH) guidelines. The mitigation measures will be taken as following:<br><br>- The training/meeting supported by CTB for PPD injection will be incorporated with best | CTB included the safe procedures on proper handling, use and disposal of medical waste (syringes and needles) in the training sections and also emphasized during trainings/meetings with health care providers.<br><br>During the supportive supervision, CTB closely monitored the disposal of used syringes and needles of visited referral hospitals, to ensure that all hospitals | CTB continues using developed checklist during the supportive supervision at hospital level. | |

| | | | |
|---|---|---|---|
| practices for proper handling, use, and disposal of medical waste.<br><br>- CTB will develop a checklist and integrate it into TB infection control (IC) to measure and ensure health care providers are in compliance with safe management regarding medical waste and infection control procedures.<br><br>- During supportive supervision visits, management and disposal of medical waste will be checked using developed checklist and discussed; when necessary, corrections will be made. | had properly packed and burned medical wastes (syringes and needles) in incinerator on a regular basis.<br><br>All visited RHs put used syringes and needles in safety box and burn in incinerators on a regular basis. | | |

| | | | |
|---|---|---|---|
| CTB will obtain the country's non-medical and medical waste management regulations and procedures. CTB will support training in clinical waste management and ensure that it is integrated into training programs and National TB Program guidelines. Training material will align with either the *Environmental Guidelines for Small-Scale Activities in Africa* or the national regulations and procedures for medical waste. Additional mitigation measures will be taken as following:<br><br>- The training/meeting supported by CTB for sputum collection/ transportation and PPD injection will be incorporated with best practices for proper handling, use, and disposal of medical waste.<br><br>- CTB will develop a checklist and integrate it into TB infection control to measure and ensure health care providers are in compliance with safe management regarding medical waste and infection control procedures.<br><br>- During supportive supervision visits, management and disposal of medical waste will be checked using developed checklist and discussed; when necessary, corrections will be made. | CTB included the safe procedures on transportation and disposal of sputum containers in the training sections and also emphasized during trainings/meetings with health care providers and VHSGs.<br><br>During the supportive supervision, CTB closely monitored the disposal of sputum containers of visited health centers, to ensure that all HCs had properly packed and burned medical wastes (sputum containers) in incinerator on a regular basis. Moreover, CTB checked with HC to see the incinerator are well function.<br><br>All visited HCs packed the sputum containers in a plastic bag and burned in incinerator on a regular basis. | CTB continues using developed checklist during the supportive supervision at health center level. | |

## Annex III: Geographic Coverage

| | Province | Operational District | Prison inmates (n) | Elderly& children | Hospital Engagement | Childhood TB*** |
|---|---|---|---|---|---|---|
| 1 | Battambang | Battambang | | CTB | CTB | |
| | | Thmar Koul | | | | |
| | | Sangker | | CTB | | |
| | | Moung Russey | | CTB | CTB | |
| | | Sampov loon | | | | |
| 2 | Kampot | Kampot | CTB; Kampot (479) | | | |
| | | Chhouk | | | | |
| | | Angkor Chey | | | | |
| | | Kg Trach | | | | CTB |
| 3 | Kandal | Takhmao | CTB; Takhmao (1,188) | | | |
| 4 | Kampong Cham | Kg Cham- Kg Siem | | | | CTB |
| | | Prey Chhor | | CTB | | |
| | | Cheung Prey | | | | |
| | | Chamkar Leu | | | | CTB |
| | | Srey Santhor | | | | CTB |
| | | Kroch Chmar | | | | |
| 5 | Tbong Khum | Tbong Khmum | CTB; Kampong Cham (1,054) | CTB | | |
| | | Ponhear Krek | CTB; Correction Center 3 (1,480) | | | |
| | | Oreang Ov | | | | |
| | | Memut | | | | |
| 6 | Kampong Chhnang | Kg Chhnang | | | | CTB |
| | | Kg Tralach | | | | CTB |
| | | Boribor | | | | |
| 7 | Preah Sihanouk | Sihanouk ville | CTB; Sihanouk Ville (496) | | | |
| 8 | Kampong Speu | Kg Speu | CTB; Kampong Speu (505) | CTB | CTB | |
| | | Oudong | | | | |
| | | Kong Pisey | | CTB | CTB | |
| 9 | Kampong Thom | Kg Thom | | | | CTB |
| | | Baray Santuk | | | | |
| | | Staung | | | | |
| 10 | Koh Kong | Smach meanchey | CTB; Koh Kong (357) | | | |
| | | Sre Ambel | | | | |
| 11 | Prey Veng | Prey veng / Svay Antor | CTB; Prey Veng (444) | | | CTB |
| | | Kamchay mear | | | | |
| | | Neak Loeung | | | | |
| | | Peareng | | | | CTB |
| | | Kg Trabek | | | | CTB |

| | Province | Operational District | Prison inmates (n) | Elderly& children | Hospital Engagement | Childhood TB*** |
|---|---|---|---|---|---|---|
| | | Preh Sdach | | | | CTB |
| | | Mesang | | | | CTB |
| 12 | Pursat | Sampov Meas | | CTB | CTB | |
| | | Bakan | | CTB | | |
| 13 | Svay Rieng | Svay Rieng | CTB; Svay Rieng (371) | | | CTB |
| | | Romeas Hek | | | | |
| | | Chi Phou | | | | |
| 14 | Takeo | Donkeo | CTB; Takeo (394) | | | |
| | | Ang Roka | | | | |
| 15 | Udor Mean Chhey | Samrong | | | | |
| | | | **Total** | 9 | 5 | 13 |